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BIOLOGIA

CENTRALI-AMERICANA.

INSECTA.

HYMENOPTERA.

(*FOSSORES.*)

VOL. II.

BY

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Smithsonian Institution
National Museum

1888–1900.

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INTRODUCTION.

In this Volume twelve Families of the section Fossores of the Hymenoptera Aculeata are dealt with—Sphegidæ, Ampulicidæ, Larridæ, Nyssonidæ, Bembicidæ, Philanthidæ, Mimesidæ, Pemphredonidæ, Crabronidæ, Pompilidæ, Scoliidæ, and Mutillidæ. It was commenced by Mr. Cameron in 1888 and concluded in 1896, a short Supplement having been added last year. Mr. H. H. Smith's earlier collections of Fossores from Mexico, as well as those made in Yucatan by Mr. Gaumer, were fortunately received in time to be included, the additions subsequently sent not being very numerous. Hence, a much more varied material was available for study compared with what we had for Volume I. at the time of publication, and probably our enumeration in this case is relatively more complete.

It is to be regretted that so many of the previously described Mexican Mutillidæ remain unrepresented or unidentified in our collection, and the same remark applies with still greater force to the Ichneumonidæ, dealt with in Volume I.

Altogether 711 species are enumerated, of which 391 are treated as new, the total number for each Family being as follows:—Sphegidæ, sixty-seven, with thirty-seven new; Ampulicidæ, two, with one new; Larridæ, fifty-two, with thirty-nine new; Nyssonidæ, thirty-two, with twelve new; Bembicidæ, twenty-six, with two new; Philanthidæ, fifty-four, with twenty-eight new; Mimesidæ, eight, all new; Pemphredonidæ, three; Crabronidæ, twenty-four, with twenty-two new; Pompilidæ, 163, with seventy-eight new; Scoliidæ, fifty-nine, with twenty-seven new; Mutillidæ, 221, with 137 new.

ED.

August 1900.

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—— —— (♂ genitalia)	I.	11 *a*	7
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* *Ammophila zanthoptera* on the Plate.

† *Ammophila chiriquensis* on the Plate.

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* The name of this genus is incorrectly given as *Steniola* on the Plate.

† *Stizus godmani* on the Plate.

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* The generic name of these species is given as *Philanthocephalus* on the Plate.

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ERRATA ET CORRIGENDA.

Page	Line	
8	32	for **zanthoptera** read **xanthoptera**.
134	22	*for* convential *read* conventional.
173	18	for **panamensis** read **chiriquensis**: the name *panamensis* has been used for two different species of *Salius*; it is necessary therefore to change one of them.
401	24	*for* with *read* without.

595.7

BIOLOGIA CENTRALI-AMERICANA.

ZOOLOGIA.

Class INSECTA.

Order HYMENOPTERA.

ACULEATA.

Under the designation of 'Aculeata' are included the Hymenoptera commonly called Wasps, Ants, and Bees, the other section of the Order with petiolated abdomen being called 'Terebrantia.' As a matter of fact I do not see how any clear line of demarcation can be drawn between the 'Aculeata' and the 'Terebrantia,' nor am I sure that they can be separated by any one structural character. It is doubtful if Hartig's divisions of 'Ditrocha' and 'Monotrocha' can be looked upon as altogether satisfactory; for, like most classifications based upon a single character, it would separate groups which agree in many points to place them near those with which they agree in one only.

The Aculeata include four more or less clearly defined sections—the 'Fossores,' 'Diplopteryga,' 'Heterogyna,' and the 'Anthophila.'

Section **FOSSORES.**

This section contains the sand- and wood-wasps and the Mutillidæ. From the 'Heterogyna' (Ants) they are recognizable by the abdominal petiole having neither scales nor nodes, in which respect they agree with the 'Diplopteryga'; the 'Fossores,' in fact, only differ from the latter in the wings not being folded longitudinally in repose.

Fam. SPHEGIDÆ.

This family is tolerably well defined by the neck-like prothorax, the hinder angles of which do not reach to the tegulæ, and by the smooth, cylindrical petiole.

In this and the following families I have had figured by Mr. William Chaffers the male genital organs wherever these exhibit any specific distinctions; for it must be recollected that they do not vary to the same extent in all families. When they do differ their form affords most valuable aid in discriminating the species; and in my opinion they should be figured whenever possible. In the various families the male organs vary exceedingly, to such an extent that in some of them it is not easy at first to trace the homologous parts.

For taxonomical purposes we may distinguish three distinct parts:—

1. The basal piece, or cardo. This does not show much variety in form, though not always of the same length or breadth.

2. The forceps, or stipes. This is the outer piece, and shows very great variation in form and clothing. It divides itself into three, or in some cases four, parts:—

a. The branch, which is the outermost portion, and, as often as not, bears hairs or bristles. It is sometimes one-, sometimes two-jointed, the second joint being formed by the separation of the top from the basal part; and usually takes the form of a palpiform articulation, to which the name of lacinia has been given.

b. The volsella, which is in most families a very characteristic piece. It is sometimes broad, flat and lobe-like, sometimes cylindrical.

c. The tentaculum, or pincers of Dufour. This is not invariably present. When it is, it assumes different forms—round, broad, or palpiform; and the apex sometimes ends in a spoon-shaped process, surrounded with hairs, and sometimes terminates in a beak or hook.

3. The sagittæ, or hamuli; the "baquettes cornées" of Dufour. These are the central pair of organs, and have the penis placed between them; but the latter can seldom be observed. The sagitta, like the other parts, has a particular form in the various families, and terminates in teeth or hook-like processes. At its base is a kind of envelope—the spatha or "fourneau de la verge" of Dufour.

In the Sphegidæ the male armature is rather characteristic. The branch of the forceps is stout, flattish, broad or narrow at the base, and becomes narrowed at the top, where it, as a rule, curls over the sagittæ. It is but seldom two-jointed, and frequently is pilose at the top, and sometimes at the middle. The volsella is characteristic; it is flat and broad, and towards the apical two thirds on the inner side it becomes narrowed from the inner to the outer side into a more or less fine point. The tentaculum is narrow, but not cylindrical; it usually reaches near to the top of the volsella, and ends in a variably-shaped organ, which, however, generally takes the form of a beak, hook, or spoon-shaped process. The sagittæ project above the volsella; they are narrow, and terminate in a lobe-like process, which frequently bears a hook.

AMMOPHILA.

Ammophila, Kirby, Trans. Linn. Soc. iv. p. 195 (1798).
Psammophila, Dahlbom, Hym. Eur. i. p. 16 (1843).

All the species known from our region are typical *Ammophila* or *Psammophila*, which latter differs merely from *Ammophila* in the form of the petiole. The genus is a very extensive one, and contains a large number of representatives from all parts of the world. The species frequent hot sandy districts, and provision their nests with caterpillars.

The male armature is tolerably uniform, that of *A. miliaris* and *A. aureo-notata* being the most aberrant. The tentaculum is beak-shaped, or an elongated triangle. The outer lobe of the volsella is long and narrow. The sagittæ are not much dilated at the apex, and bear a long, thin, whip-shaped process, which is usually folded across.

I. *Petiole composed of two joints.* (Species 1–28.)

A. *Abdomen bluish-black, without red.* (Species 1–8.)

a. *Mesothorax punctured.* (Species 1–5.)

1. **Ammophila miliaris.** (Tab. I. figg. 1 ; 1 *a*, ♂.)

Nigra, opaca, breviter fusco-villosa ; thorace capiteque argenteo-pilosis ; alis fuscis vel violaceis ; ♀ clypeo fere truncato, ♂ acuminato.
Long. 12–15 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*) ; PANAMA, Bugaba 800 to 1500 feet, Volcan de Chiriqui, David (*Champion*).

Head opaque, with some scattered shallow punctures, which are more numerous on the face and more especially on the clypeus ; the front ocellus separated from the posterior ocelli by less than half the space between these ; vertex almost bare of pile, but (like the rest of the head) bearing some rather long blackish-fuscous hair ; face closely covered with a short silvery pile, which is longest on the clypeus ; the latter is produced, waved at the sides, and slightly depressed in the middle at the apex. Pronotum with an oblique, broad, shallow depression on either side in front, the top thereby being narrowed, separated from, and somewhat raised above, the sides. Mesosternum tuberculate at the base and apex laterally, the posterior tubercles smaller and more clearly separated than the anterior ones ; the centre strongly transversely striolated and distinctly furrowed ; between the middle legs depressed in the centre and tuberculate laterally. On the mesopleura a }-shaped broad furrow runs down from the tubercles. Thorax velvety (especially in front), opaque, the scutellum more shining ; postscutellum transversely ridged, opaque, alutaceous ; metanotum transversely, the metapleuræ obliquely, coarsely striated ; metanotum with an indistinct shallow longitudinal depression

in the centre. Tegulæ shining. The tubercles, a larger spot on the mesopleuræ, and another at the end of the metapleuræ, silvery-white. The apical segments of the abdomen deep velvety-black. Hind coxæ covered with a silvery pubescence. The third antennal joint one quarter longer than the fourth.

The male has the clypeus and face densely covered with a golden pubescence; the clypeus produced at the apex into a short blunt tooth and projecting outwardly; and the mesosternum not or hardly tuberculate.

Note.—A male example before me, of which the armature is figured on Tab. I. fig. 6, clearly represents a distinct species from *A. miliaris*; but apart from this difference in the genital organs I cannot separate it by any satisfactory character from *A. miliaris*. I have some other Central-American specimens (females) which are probably distinct from any I have described; but I am at present far from being clear as to the specific characters by which they can be differentiated from *A. miliaris*.

2. **Ammophila gaumeri.** (Tab. II. fig. 2, ♂.)

Hab. Mexico, Temax in North Yucatan (*Gaumer*); Guatemala, San Gerónimo (*Champion*).

Similar in form and colour to *A. miliaris*; but differing in the clypeus being almost flat (not produced broadly in the middle and depressed at the apex), with its apex not so sharply truncated, the curve from the sides being longer and more gradual, and also in having a broad well-defined border to it; the mesonotum wants the velvety appearance; the metanotum is not transversely striated, but opaque and granular, and the edges only show traces of striation; the petiole is shorter; the second cubital cellule is broader at the top, the nervures not approaching each other, so that the top is half the length of the bottom (in *A. miliaris* it is not one sixth); the recurrent nervure is received before the middle (not at the middle as in *A. miliaris*); the front ocellus is more widely separated from the posterior ocelli; the pronotum is not raised in the centre and is broader above; the sternum is alutaceous and not tuberculate; the third antennal joint is more than twice the length of the fourth; and the pleuræ, coxæ, and abdomen are of a much more decided bluish tint.

The pile all over the body is sparse; the face and clypeus want the silvery pubescence entirely, and on the thorax it is only visible on the tubercles and on two spots on the apex of the metanotum. In the centre of the mesonotum is a depression which is prolonged as a distinct furrow towards the base, and there is a depression on either side close to the tegulæ. The puncturing on the mesonotum is rather close, but not very strong. The scutellum is opaque, closely punctured, the punctures at the apex running into longitudinal striations. The postscutellum is rugosely punctured. The hind tibiæ and the base of the tarsi on the inner side are covered with a fulvous pubescence; the other parts of the legs are almost devoid of pile.

The male I refer to the same species has the clypeus and cheeks densely covered with a thick silvery pile, and the former is slightly incised in the middle; the pleuræ have a silvery pubescence; the scutellum is more distinctly striated towards the apex; the hair on the head and thorax is longer; the bluish tint of the body is not so conspicuous; and the wings are lighter-coloured towards the middle and base.

3. **Ammophila micans.**

Cærulea, fusco-hirta, thorace opaco; clypeo truncato; alis fusco-violaceis. ♀.
Long. 20–21 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

The face bears some scattered punctures; the vertex and thorax are alutaceous, opaque, of a darker colour than the rest of the body, varying almost into black. The cheeks bear a faint silvery pile; and, as well as the rest of the head, are covered rather closely with longish black hairs. Clypeus not projecting, furrowed; the apex broadly transverse in the middle. The furrow on the vertex is deep and moderately broad. The front ocellus is separated from the posterior ocelli by fully half the space between these. The third antennal joint is more than twice the length of the fourth. The thorax has but a very faint punctuation; the scutellum is more shining, and has some punctures; there is not a distinct depression in the centre of the mesonotum, but one on either side; a narrow furrow runs down the mesopleura from the tegulæ, and there is a short transverse one beyond it opposite the tubercles. Mesosternal furrow indistinct. Metathorax granular, opaque, indistinctly striated. The thoracic pubescence is rather dense and fuscous-black; the tubercles and a spot on either side of the metanotum are silvery. Abdomen almost shining, and glabrous; the petiole black, but slightly curved. Legs almost without any pile; the tibiæ with a few bristles. The second cubital cellule is at the top about one fourth longer than the corresponding part of the third; the first recurrent nervure is received before the middle.

4. **Ammophila iridipennis.**

Nigra, subnitida, thorace fulvo-villoso; sparse punctata, metanoto pleurisque striatis; clypeo ♀ curvato, ♂ transverso; alis fusco-violaceis.
Long. 23 millim.

Hab. GUATEMALA, Zapote (*Champion*).

Face and clypeus bearing a short, sparse, pale pile; and, as well as the front and vertex, sparsely covered with longish black hair, and marked with scattered punctures. Front depressed in the centre, where there is an ill-defined furrow. Clypeus broadly convex, the extreme apex depressed, margined, and waved in the middle. Third antennal joint one half longer than the fourth. Pronotum raised broadly in the centre above; the sides projecting into tubercles. Mesosternum indistincly tuberculate at the base and apex. A }-shaped furrow runs down from the tubercles. Thorax rather

closely covered with a fulvous pile; the pro- and mesonotum sparsely punctured and shining; pleuræ opaque, obliquely striated, except in front below the tegulæ; metanotum opaque, closely pilose, the base rugose, the rest closely transversely striated, the centre depressed towards the apex; scutellum depressed in the middle, the apex longitudinally striated; mesonotum with a furrow down the centre, the furrow not distinct at the base. Basal joint of the petiole pruinose, curved; the rest of the abdomen pruinose, the apical segment bearing some longish black hair. Legs densely pruinose. Second cubital cellule at the bottom three times the length of the third, and at the top not much shorter than the space bounded by the first transverse cubital and first recurrent nervures; second recurrent nervure received quite close to the second transverse cubital; third cubital cellule at the top as wide as at the bottom.

The male has the head below the antennæ densely covered with golden pile; and the apex of the clypeus broadly transverse.

The sericeous spots on the thorax are formed as in *A. miliaris*, from which the male is readily known by the clypeus being transverse. In the female the clypeus does not project so much, and the apex is broadly incised; the pile is sparser, especially on the thorax, which has not the velvety appearance; and the third cubital cellule is wider at the bottom, and not much narrower there than at the top. *A. iridipennis* is also smaller than *A. miliaris*. The allied *A. gaumeri* is longer, is distinctly bluish in tint, has the clypeus flatter and transverse at the apex, &c.

✓ 5. **Ammophila centralis.** (Tab. I. figg. 12; 12 *a*, ♂.)

Nigra, opaca, longe nigro-hirta, abdominis segmento 2° subtus testaceo, metathorace coriaceo, clypeo inciso; alis fuscis. ♂.

Long. 20 millim.

Hab. GUATEMALA, El Reposo 800 feet, San Gerónimo (*Champion*).

The eyes are large, projecting, and converge on the lower side. Face covered with silvery pile; clypeus broadly incised in the middle; hair longish and rather dense; vertex slightly depressed in the centre, but without a furrow; punctuation moderately close, but shallow. Third antennal joint nearly one half longer than the fourth. Pro- and mesonotum shining, closely punctured; an indistinct furrow in the centre of the former, a distinct broad one in the middle of the latter, and one on either side; scutellum strongly punctured; pleuræ finely rugose, opaque; a semioblique furrow runs down the mesopleuræ from the tegulæ; metanotum rugosely striated, flat in the centre. The pubescence is scarcely so long as that on the head, but dense; the pleuræ have a short silvery pubescence, the apex of the metathorax a longer and denser one. Petiole long. Legs covered with a hoary pile; the coxæ have longish hair. Wings lighter in tint at the apex; second cubital cellule at the top but very slightly longer than the third; the first recurrent nervure received before the middle where the cellule is angled.

b. *Mesothorax transversely striated.* (Species 6–8.)

6. **Ammophila aureo-notata.** (Tab. I. figg. 11 ; 11 *a*, ♂ .)

Nigra, abdomine subcæruleo, mesonoto striato ; alis fumatis ; ♀ clypeo transverso, ♂ acuminato.
Long. 12–15 millim.

Hab. Mexico, Valladolid in Yucatan (*Gaumer*).

Face in the female densely covered at the sides and on the clypeus with silvery-white hair ; the vertex shining, bearing a very short pale pile and a few longish hairs, fuscous or blackish ; the sides of the head bearing longish white hairs. Clypeus produced broadly in the middle, the apex depressed and transverse ; the sides rounded. Front depressed in the centre, where there is a narrow, but distinct furrow running down from the ocelli, these latter being surrounded and united by furrows. The vertex and front bear some distinct punctures, those on the front being the longer. The ocelli are almost in a triangle. The third antennal joint is twice the length of the fourth. Pronotum narrow above, with a slight longitudinal furrow on the top and an oblique furrow on either side. Sternum transversely striolated. A wide oblique furrow in the centre of the propleuræ ; and a }-shaped furrow runs down the mesopleuræ from the tegulæ. Prothorax above and laterally shining, impunctate, sparsely pilose ; the prosternum opaque, alutaceous. Mesonotum strongly transversely striated, depressed in the centre (where it is scarcely striated) and along the sides. Mesopleuræ opaque, finely but rugosely punctured. Scutellum stoutly, longitudinally, rugosely striolated. Metanotum depressed in the middle, transversely striated ; metapleuræ obliquely striated, opaque. The thorax is sparsely covered with a greyish pile and has some rather long pale hairs ; there is a golden spot on the middle of the mesonotum at the base ; the tubercles, a large mark on the mesopleuræ, and an oblong spot on either side of the metanotum are silvery white. The petiole is deep black, shining ; the rest of the abdomen is covered with a velvety pile, and inclining to blue in tint. Legs covered with a short, greyish, silky pile, which is longest on the coxæ. Wings uniformly fusco-hyaline, varying in intensity in different individuals, but never darker at the apex.

The male has the face thickly covered with a golden pile ; and the clypeus acuminate, terminating in a stout tooth.

7. **Ammophila barbata.**

Ammophila barbata, Smith, Ann. & Mag. Nat. Hist. 4th ser. xii. p. 260 (1873)[1].

Hab. Mexico [1].

In having the mesothorax transversely, and the scutellum longitudinally, striated, as well as in coloration, this species agrees with *A. aureo-notata* ; but it must, I think, be regarded as distinct. *A. barbata* is said to have the prothorax coarsely transversely

striated; and the metanotum to have "an elongate, angular space at the base rugose, on each side of which is an oblique striation" (in *A. aureo-notata* the metanotum is entirely striated). In *A. barbata* the wings are "hyaline, with their apical margins fuscous beyond the apex of the marginal cellule, the fuscous border sharply defined."

8. **Ammophila ceres.** (Tab. I. fig. 10, ♂.)

Nigra, dense griseo-pilosa, punctata, thorace supra transverse striolato; alis fusco-hyalinis. ♂.
Long. 31 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

The hair on the head is longer than that on the thorax and is blacker; the face has a griseous pubescence; the vertex and front are punctured rather strongly; the latter is not much depressed in the middle, where there is a shallow furrow. Clypeus broadly transverse at the apex, slightly retreating in the centre, giving the appearance of an incision there; it does not project. Front ocellus separated from the posterior ocelli by fully half the space between these. Third antennal joint one half longer than the fourth. Pronotum broad, rather long; an oblique broad furrow on the pleuræ. A broad shining furrow runs down from the tegulæ. Sternum indistinctly furrowed. Thorax densely covered with long griseous hairs; densely and strongly punctured, above strongly transversely striolated; the scutellum with some stout longitudinal keels; postscutellum more raised, rugose, a stout keel on its apical margin. There is an indistinct furrow in the centre of the mesonotum; the metanotum is depressed laterally. The petiole is nearly as long as the thorax; the third segment is rufous laterally and beneath in the middle. The legs are hoary; the coxæ bear a few hairs; the tarsi are very shortly spinose. The second cubital cellule is twice the length of the top at the bottom, the top not being much longer than the space bounded by the first transverse cubital nervure and the first recurrent nervure; the latter is recurved a little before the middle of the cellule; the third cubital cellule is of nearly equal width at the top and bottom; the third recurrent nervure is bent outwardly a little below the middle.

B. *Abdomen more or less red in the middle.* (Species 9–28.)

a. *Legs entirely black.* (Species 9–25.)

1. *Wings yellowish; head and thorax bluish.* (Species 9.)

9. **Ammophila zanthoptera.** (Tab. I. fig. 4.)

Nigro-cærulea, dense fusco-pilosa, punctata; metanoto transverse striolato; abdominis medio rufo; alis flavo-hyalinis, stigmate nervisque flavis. ♀.
Long. 27 millim.

Hab. GUATEMALA, Calderas 6000 feet (*Champion*).

Antennæ almost bare, or slightly hoary. Head covered with long blackish hair, punctured, but not strongly; frontal furrow wide, shallow. Clypeus transverse at the apex; the angles obliquely rounded, scarcely projecting. Third antennal joint twice the length of the fourth. Thorax opaque, covered with shorter and paler hair than the head, closely punctured; the furrow on the mesonotum deep, wide; a narrow furrow runs down from the tegulæ, and a short transverse one runs from it opposite the tubercles, uniting to an oblique one; mesosternal furrow distinct; metanotum closely, transversely striated, scarcely depressed in the centre. Abdomen covered with a close hoary pile; the apical three fourths of the second and the third and fourth segments entirely red. The petiole has scarcely a bluish tinge. Tibiæ and tarsi covered with a hoary pile, the latter densely spinose, the former with a few stout spines. The second cubital cellule is longer on the upper and lower side than the third, the top half the length of the bottom, the latter slightly angled where the recurrent nervures are received—before the middle and a little before the apex; the third cellule at the top is about one third of the length of the bottom; the third transverse cubital nervure is turned backwards before the middle is reached.

2. *Wings fuscous; thorax densely pilose.* (Species 10–25.)

† *Mesothorax striated.* (Species 10, 11.)

10. **Ammophila championi.** (Tab. I. fig. 3.)

Nigra, thorace capiteque dense griseo-pilosis; thorace fortiter punctato, supra transverso striolato; scutello longitudinaliter striolato; abdominis segmentis 2° et 3° pro parte rufis; alis fusco-violaceis. ♀.

Long. 33 millim.

Hab. GUATEMALA, San Gerónimo and Cubulco in Vera Paz (*Champion*).

Head covered with long blackish hair; the front and vertex finely, the clypeus more strongly, punctured; front depressed above the antennæ, and with an indistinct furrow running down its middle; clypeus transverse in the centre. Third antennal joint more than twice the length of the fourth. Thorax densely covered with longish (but still shorter than that on the head) grey hair; the pleuræ strongly punctured, the tubercles impunctate; pro-, meso-, and metanotum strongly transversely striolated, except the mesonotum at the base; scutellum strongly longitudinally striolated; postscutellum rugose; there is a narrow furrow in the centre of the mesonotum, and a narrow, not very distinct, furrow runs down from either side of the tegulæ. Coxæ and femora sparsely covered with long black hair; tarsi densely, the tibiæ sparsely, spinose. The top of the second cubital cellule is a little longer than the space bounded by the first transverse cubital and the first recurrent nervures; the latter is received before the middle; the third cubital cellule is somewhat longer than the space enclosed by the two recurrent nervures and about one fourth shorter than the bottom of the cellule.

11. **Ammophila striolata.**

Nigra, breviter sericeo-villosa; pro-, meso- et metanoto transverse striolatis; scutello longitudinaliter striolato; clypeo dense fulvo-villoso, apice transverso; abdomine rufo, apice nigro; alis fusco-hyalinis. ♀.
Long. 24 millim.

Hab. Mexico, Ventanas in Durango 2000 feet (*Forrer*).

The pubescence on the head is very close and dense all over, but sparsest in the centre of the vertex. The vertex is broadly and deeply depressed in the middle above the antennæ. Clypeus obliquely depressed at the apical half, the apex itself almost depressed. Third antennal joint twice the length of the fourth. Collar elongate, broadly obliquely furrowed laterally. The pubescence on the thorax is dense, forming two oblique silvery stripes on the pleuræ, the posterior stripe being united to the silvery patch on the apex of the middle segment. The top of the pronotum bears thick patches of pubescence at the base and apex. The striolation on the pro- and meso-notum is strong and close; on the metanotum it is finer, closer, and oblique; on the scutellum it is still stronger and coarser. The mesopleuræ are strongly punctured; a curved furrow runs down from either side of the tegulæ. There is a shallow furrow in the centre of the mesonotum; the metanotum is depressed in the middle. Abdomen elongated, pruinose. Legs densely pruinose. At the top the second cubital cellule is as wide as the space bounded by the first transverse cubital and first recurrent nervures, and nearly one fourth longer than the top of the third cellule; the latter is narrower at the top than at the bottom, and considerably dilated on the lower half.

†† *Mesothorax punctured.* (Species 12–25.)

* *Petiole black.* (Species 12–23.)

12. **Ammophila alticola.** (*A. chiriquensis*, Tab. I. fig. 9 *a*, ♂.)

Nigra, apice petioli abdominisque segmento 1° lateribus rufis; dense punctata et argenteo-villosa, scutello rugoso-striato, metanoto transverse rugoso; clypeo dense aureo-villoso, apice fere transverso; alis fusco-hyalinis. ♂.
Long. 24 millim.

Hab. Panama, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

A long narrow insect. The pubescence on the thorax is long and dense, and forms a conspicuous oblique stripe down the apex of the mesopleura, the usual hirsute spots being also distinctly visible. The hair on the top of the head is long and moderately dense, and the front and vertex are closely, but not deeply, punctured. The clypeus is produced, but broadly transverse at the apex; the sides are rounded. Ocelli nearly in a triangle. Third antennal joint hardly one quarter longer than the fourth. Collar moderately long; the sides with two oblique depressions, the upper depression the shortest and semioblique. Thorax closely and distinctly punctured, almost transversely punctured in the middle of the mesonotum; the latter has a narrow furrow down its

centre; scutellum rugosely longitudinally striated, the interstices being finely rugose; metanotum flat, the shield-shaped central part distinctly separated and transversely rugose; metapleura rugose. Two furrows run down from the tegulæ, the first bending sharply to the second near its apex. Abdomen elongate, narrow, the apex bluish-black. Wings shorter than the abdomen; the second cubital cellule at the top is a little shorter than the space bounded by the first transverse cubital and first recurrent nervures, and longer than the third at the top; the third cubital cellule is half the length of the bottom at the top. Legs densely silky-white-pruinose.

13. **Ammophila trichiosoma.** (Tab. I. fig. 13, ♂.)

Nigra, capite et thorace dense cinereo-pilosis, punctatis, scutello rugoso, metathorace transverse punctato; abdominis segmento 2° petiolique apice subtus rufis; alis fusco-violaceis, apice fumatis. ♂.

Long. 14 millim.

Hab. GUATEMALA, Capetillo (*Champion*).

The hair on the head is long and black, and there is a short silvery pile on the face. The front is not depressed and there is no furrow. Clypeus very slightly and broadly incised in the middle; the sides oblique. Front ocellus separated from the posterior ocelli by less than half the space between these. Third antennal joint more than twice the length of the fourth. The punctuation on the head is indistinct, that on the thorax rather strong and close. The hair on the thorax is not so long as on the head, but is much closer and thicker and greyish. The central furrow on the mesonotum is wide and distinct; there is no furrow on the pronotum. The propleuræ have an indistinct semioblique furrow. Scutellum strongly, almost rugosely, punctured. A curved furrow runs down from the tegulæ. Legs covered with a silvery down; the coxæ with long white hair; the spines on the tibiæ moderately thick. The second cubital cellule above is scarcely longer than the third; below it is about one fourth longer.

14. **Ammophila picipes.** (Tab. II. fig. 4, ♂.)

Nigra, flagello antennarum tegulisque sordide rufis; pedibus piceis, basi nigris; abdomine rufo, basi late nigro; alis hyalinis, apice fumatis. ♂.

Long. 15 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

Head and thorax covered with long cinereous or fuscous hair; apex of the clypeus sinuated, hardly depressed; mandibles piceous towards the apex. Front moderately depressed in the centre. Third antennal joint one quarter longer than the fourth. Prothorax shining, impunctate, elongate, the sides with a curved horizontal furrow; mesothorax rugosely punctured, the mesonotum transversely so. Scutellum longitudinally striolated. Postscutellum and metathorax rugose. Petiole longer than the head and thorax united; red, black above; the second segment for the greater part red. The second and third cubital cellules variable; above subequal.

15. **Ammophila consors.** (Tab. II. fig. 3, ♂.)

Nigra, capite et abdominis apice nigro-cæruleis, apice petioli abdominis segmentoque 2° rufis; clypeo fere truncato; scutello punctato; alis cum nervis fusco-hyalinis, vel flavo-fuscis. ♂ ♀.
Long. 18–24 millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Head broad, almost shining; the front and vertex covered with a sparse, short, black, depressed pubescence; the clypeus with a longer silvery pubescence. Front acutely depressed in the middle; the central furrow distinct. Clypeus depressed inwardly at the apex, which is broadly truncated, with the sides rounded; the apex margined; the central region bearing some large punctures. Mandibles entirely black, shining; the basal part with elongated punctures. Third antennal joint fully twice the length of the fourth. Prothorax elongate; a broad, shallow, oblique furrow on the sides. Thorax almost shining; covered with a depressed short pubescence; the tubercles, a broad oblique stripe on the mesopleuræ, and a spot over the hind coxæ, silvery. Mesonotum with a broad moderately deep furrow in the centre, and there is a broader and shallower depression along the sides of the tegulæ; two narrow furrows run down from the tegulæ, and a short transverse one branches off from the first. Scutellum shining, slightly depressed in the middle; almost impunctate, posteriorly irregularly and indistinctly striolated in some specimens; postscutellum sometimes irregularly punctured. Metanotum opaque, transversely striated. Abdomen shining; the apical ventral segments with some longish hairs, the last closely punctured. In most specimens the apical joint of the petiole is more or less black above, and the second segment is sometimes black at the apex. The second and third cubital cellules somewhat variable in size: generally above they are of nearly equal length; the third above is about three fourths the length of the bottom. Tibiæ and tarsi rather strongly spinose; the metatarsal brush rufous.

The specimens I take to be the male have the head and thorax more densely pilose; the apex of the clypeus depressed and a little incised in the middle; the thorax punctured; the apex of the petiole and the second segment only black beneath; the pleuræ with a continuous silvery pile; the furrow on the mesonotum shallower; and the head and apex of the abdomen want the bluish tinge.

The colour of the wings varies in both sexes: in some examples the apex is much darker than the middle and base, but generally the colour is of uniform intensity.

16. **Ammophila nigro-cærulea.** (Tab. I. fig. 8.)

Nigro-cærulea, sparse fusco-pilosa et argenteo-pubescens; leviter punctata, scutello et metapleuris crebre punctatis; metanoto transverse striolato; abdominis segmentis 2° et 3° rufis; alis fusco-hyalinis.
Long. 12–14 millim.

Hab. Guatemala, San Gerónimo (*Champion*).

The pubescence and hair on the head are rather sparse, as is also the punctuation.

The front is deeply depressed and has a distinct furrow. Clypeus transverse; its furrow not very deep or broad. Ocelli forming almost a triangle. Third antennal joint twice the length of the fourth. Prothorax moderately elongate, and with two oblique lateral furrows. On the thorax the hair is shorter, paler, and thicker; the pubescence is very dense and silvery on the pleuræ and on the apex of the metathorax; the punctuation is shallow, but close—on the scutellum it is closer and coarser, and on the postscutellum it is still stronger and almost rugose; the furrow on the mesonotum is broad and moderately deep; two furrows run down from the tegulæ, the first emitting a short transverse one; the metanotum has the transverse striation strong and rugged, and is depressed in the centre.

17 **Ammophila montezuma.** (Tab. I. fig. 15.)

Nigra, argenteo-pubescens, capite et thorace dense cinereo-pilosis; crebre punctata; clypeo inciso; scutello punctato; metanoto transverse striolato; apice petioli abdominisque segmentis 2° et 3° lateribus ventreque rufis; alis fere hyalinis, apice fumatis. ♂.

Long. 25 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

The face has a long, dense, silvery pubescence; the front and vertex are almost bare; the hair is moderately thick, longish, and cinereous. Front moderately depressed; the furrow shallow. Clypeus incised. Posterior ocelli separated from each other by a space equal to that between them and the eyes. Third antennal joint hardly one quarter longer than the fourth. Prothorax with an indistinct oblique lateral furrow. Thorax closely punctured, the scutellum rather sparsely so; the hair is rather long, very dense, and cinereous. There is a dense silvery pile on the prothorax, on the tubercles, obliquely on the pleuræ, and on the apex of the metanotum. The central furrow on the mesonotum is very indistinct; and there is none on the pronotum; a narrow furrow runs down from the tegulæ; the centre of the metanotum is slightly hollowed. Legs covered with a short hoary pubescence, the coxæ with long silvery hair; the tarsi incline to piceous. The first joint of the petiole is only reddish at the extreme apex; the second joint is entirely reddish, except a black line above; the first segment is red beyond a line in the centre above (the black not touching the base and apex); the second segment is also red, except a broad black band at the apex; the other segments (except the apical two) are reddish beneath. The second cubital cellule is more than three times the length of the third, and on the lower side more than twice the length of the third on the same side; the third cubital cellule is twice as wide at the bottom as at the top; the first recurrent nervure is received almost in the middle of the cellule, the second quite close to the apex.

A. strenua, Cresson, is closely allied to this species, but is smaller, has the scutellum channelled down the centre, the enclosed space on the metathorax without pubescence, &c.

18. **Ammophila dejecta.**

Nigra, abdominis medio late ferrugineo; dense fulvo-cinereo-pilosa; facie aureo-pilosa; clypeo fere truncato; alis fere hyalinis, apice fumatis.
Long. 17–18 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

Head wider than the mesothorax, indistinctly shagreened, covered with moderately large punctures; frontal furrow indistinct; clypeus bent inwardly at the apex, giving it the appearance of being incised. Posterior ocelli separated from each other by a less distance than they are from the eyes, and from the front ocellus by half this space. Third antennal joint one quarter longer than the fourth. Prothorax with a shallow oblique furrow. Thorax closely punctured; postscutellum rugose; metanotum striated, running into reticulations, the apex strongly punctured. An indistinct furrow runs down from the tegulæ. The hair on the thorax is long and dense; there is an oblique silvery stripe along the mesopleuræ; the metapleuræ bear silvery hair, and there is a tuft of cinereous pile on either side of the metanotum. The basal joint of the petiole beneath, the whole of the second joint, and the first and second segments (except a black line above) are ferruginous; the apical segments are scarcely pilose. Coxæ with rather long silvery-white hair; the rest of the legs with a short hoary pile; spines fuscous-black; claws ferruginous at the tips. Second cubital cellule at the top one fourth longer than the third and shorter than the space bounded by the recurrent nervures; third cubital cellule at the top one third shorter than at the bottom; second transverse cubital nervure slightly oblique, straight; first recurrent nervure received before the middle of the cellule.

19. **Ammophila cora.** (Tab. I. figg. 18; 18 *a*, ♂.)

Nigra, cinereo-hirta, apice petioli supra abdominisque segmento 1° ferrugineis; clypeo exciso; mesonoto punctato; scutello longitudinaliter striato; metanoto transverse striato; alis fuscis. ♂.
Long. 18 millim.

Hab. Guatemala, San Gerónimo (*Champion*).

Head shining; the face and clypeus sparsely punctured; the vertex with very few punctures; sparsely covered with long whitish hairs and with no pile; apex of the clypeus depressed, with a distinct margin and broadly, but not deeply, incised. Eyes converging on the lower side. Front shallowly depressed in the centre. Third antennal joint fully one quarter longer than the fourth. Prothorax with a wide transverse and a narrower oblique furrow laterally. Thorax shining, covered with long griseous hairs; the pleuræ, pro- and mesonotum punctured; scutellum with some coarse longitudinal striations; the metanotum coarsely and closely transversely striated. Legs covered with a close hoary pile; the bristles and hind calcaria pale; tips of the claws ferruginous. Top of the second cubital cellule as long as the distance between the recurrent nervures and a little shorter than the third cellule at the top; the first

recurrent nervure is received in the middle of the cellule, which is but slightly angled there; the third transverse cubital nervure is bent outwardly on the lower half and the upper half retreats inwardly, thus making the upper part of the third cubital cellule about one fourth narrower than the lower.

This species may be known from the male I somewhat doubtfully refer to *A. azteca* by the wings being deeply fusco-violaceous; the third cubital cellule much wider at the top, and at the bottom not very much shorter than the second cellule; the lower half of the third transverse cubital nervure straight; and by the mesonotum not being furrowed in the middle.

20. **Ammophila fragilis.** (Tab. I. fig. 5, ♂.)

Ammophila fragilis, Smith, Cat. Hymen. Ins. iv. p. 219 [1]; Taschenberg, Zeitschr. ges. Nat. Sachs. Thür. xxxiv. p. 434 (1869) [2].

Hab. Mexico, Northern Sonora (*Morrison*), Temax in North Yucatan (*Gaumer*); Costa Rica, Cache (*Rogers*).—South America, Brazil [1 2].

I believe I am correct in referring our Costa Rican and Mexican specimens to *A. fragilis*. In these the silvery pile on the face is short and indistinct (probably rubbed). The ocelli form almost a triangle; the posterior pair separated from each other by a less distance than they are from the eyes. The third antennal joint is nearly twice the length of the fourth. The prothorax laterally has a ⟩-shaped furrow; and two narrow furrows run down from the tegulæ. The basal joint of the petiole is for the greater part reddish beneath; the second joint is entirely so, except a broad black line on the top; the first and second segments are ferruginous, the others being bluish-black. The second cubital cellule at the top is nearly double the length of the third and longer than the space enclosed by the recurrent nervures; the first recurrent nervure is received a little beyond the basal third of the cellule, the second in the apical third; the third cubital cellule is not much wider at the top than at the bottom, the third transverse cubital nervure is bent outwardly; the stigma is testaceous. The legs slightly pruinose; the coxæ with a few hairs. The hair on the head and thorax is pale fuscous, sparse, and not very long.

Smith describes [1] the "abdomen as blue-black, and the second joint of the petiole and the base of the abdomen as ferruginous beneath." Taschenberg says [2] "petioli apice et parte antica abdominis nigro-cærulei dilatata, subtus plùs minusve rufescentibus." The Central-American specimens therefore differ in the greater extension of the red colour, and appear to form a distinct variety.

The male has the pilosity of the head and thorax more dense and long; the clypeus is densely silvery (inclining to golden), and its apex is depressed inwardly and sinuated in the middle; and the hair on the thorax (thick on the metanotum) is golden. The wings vary in colour in both sexes: in some examples they are smoky at the apex and

nearly hyaline for the rest, and in others almost uniformly fuscous. In size the specimens vary from 18–24 millim.

21. **Ammophila gracilis.** (Tab. I. figg. 7; 7 *a*, ♂.)

Ammophila gracilis, Lepel. de St.-Fargeau, Hist. Nat. Ins., Hymén. ii. p. 381 [1].

Hab. Mexico [1].

Specimens from Mexico, from Presidio and Ventanas (*Forrer*), and from Valladolid in Yucatan (*Gaumer*), and from Panama, Volcan de Chiriqui (*Champion*), are possibly referable to this species.

They may be described thus:—Black; the second joint of the petiole and the greater part of the following segment red, lined with black above; the face and cheeks, the tubercles, an oblique line on the mesopleuræ, and a spot on either side of the median segment, clothed with a dense silvery pile; the vertex and thorax covered with rather long ashy pubescence. Head slightly punctured; clypeus broadly rounded, almost transverse in the centre. Ocelli hardly forming a triangle, and widely separated from the eyes. Third antennal joint one quarter longer than the fourth. Prothorax with a ⟩-shaped furrow. Thorax rather strongly punctured; scutellum longitudinally striolated; mesonotum with a broad furrow or depression in the centre and another on either side; a)-shaped furrow runs from the base and a straight one from the apex of the tegulæ; metanotum closely and finely transversely striated. Third cubital cellule a little longer than the second at the top; below it is about one fourth longer than it is above.

The male has the face more densely and widely silvery-pilose; the oblique spot on the mesopleuræ is wider, and the pleuræ and sternum are covered with rather long dense greyish pubescence; the hair on the head and thorax is longer and denser; and the clypeus is more projecting and more rounded at the apex.

This insect is shorter than the species I have determined as *A. fragilis*; the petiole and the following segment are entirely red (and not black throughout above, while the base of the petiole is red beneath); the pronotum has a furrow in the centre; the clypeus is more depressed inwardly at the apex; the punctuation on the thorax is closer; the stigma is reddish; and the third cubital cellule is only half the length of the second above.

A. azteca differs from it in having the apex of the clypeus transverse; the clypeus and cheeks without silvery pubescence; the thorax more shining and less pubescent; the pronotum furrowed in the centre; the furrow on the mesonotum wider and deeper; and the wings distinctly fuscous-tinted throughout.

22. **Ammophila atriceps.**

Ammophila atriceps, Smith, Cat. Hymen. Ins. iv. p. 221 [1].

Hab. Mexico [1].

23. **Ammophila azteca.**

Nigra, nitida, fusco-hirta, abdominis medio rufo; alis fumatis, apice fere hyalinis. ♀.
Long. 14–20 millim.

Hab. MEXICO, Mazatlan (*Forrer*).

Head broader than the mesothorax, shining, sparsely covered with longish fuscous hair, and with moderately large punctures; clypeus scarcely projecting, the apex broadly rounded; frontal furrow narrowed, deep; mandibles black, shagreened, and with a few punctures. Ocelli almost forming a triangle, and widely separated from the eyes. Third antennal joint nearly twice the length of the fourth. Pronotum with a ⟨-shaped furrow. Thorax moderately convex, with rather long hair which varies in tint from fuscous to cinereous; pro- and mesothorax rather strongly punctured; scutellum strongly longitudinally striolated; postscutellum rugosely punctured; metanotum closely transversely striated; metapleuræ irregularly rugose. The prothorax is depressed in the centre; there is a depression in the middle of the mesonotum (very broad near the scutellum); and the metanotum is depressed in the centre. There is a silvery pile along the oblique furrow on the mesopleuræ. Coxæ sparsely covered with white hair; the femora and tibiæ with a very indistinct hoary pile; calcaria and claws testaceous; spines fuscous; the apices of the tarsal joints obscure testaceous. The apical three fourths of the second segment of the abdomen, the whole of the third segment, and the lower side of the fourth, reddish. The upperside of the second cubital cellule is fully three times the length of the upperside of the third and longer than the space bounded by the recurrent nervures; the first recurrent nervure is received before the middle; the second transverse cubital nervure is bent backwards; the third curves backwards at the top, so that the third cellule is twice the width of the top at the bottom.

An example which is perhaps the male (from Orizaba) has the clypeus and face densely covered with long silvery pubescence, an oblique stripe on the mesopleura, and the whole thorax bearing a long pale pubescence; it also has the clypeus transverse at the apex, and, if anything, slightly incurved in the middle.

** *Petiole entirely red.* (Species 24, 25.)

24. **Ammophila volcanica.** (Tab. I. fig. 19, ♀.)

Nigra, argenteo-pilosa, punctata, abdominis segmentis 1°–4^{m} rufis; alis fumatis. ♀.
Long. 19 millim.

Hab. PANAMA, Volcan de Chiriqui, 2000 to 3000 feet (*Champion*).

The silvery pile on the head is densest and longest on the face and clypeus, and there are a few longish white hairs; the vertex, front, and cheeks are shagreened; the clypeus bears some punctures and is almost transverse at the apex in the middle, and the sides are obliquely rounded; front depressed in the centre, and with a shallow keel; ocelli in a triangle, and surrounded by a furrow. Third antennal joint more

than twice the length of the fourth. Pronotum with an indistinct shallow curved furrow. The thorax is finely rugose and opaque, and bears a pile very similar to that of the head and has some short scattered hairs; on either side of the metanotum at the apex is a tuft of golden pile; the scutellum bears some coarse longitudinal striations; postscutellum rugose; metanotum transversely striated, depressed in the middle; there are no furrows on the pro- and mesonotum; a curved furrow runs down from the tegulæ. Tibiæ sparsely, the tarsi densely, spinose, and, like the femora and coxæ, bear a hoary pile. The second cubital cellule is about one half wider than the third, and its top is scarcely one half the length of the bottom; the first recurrent nervure is received very little before the middle of the cellule; the third cubital cellule is at the top rather more than one half the length of the bottom; the third transverse cubital nervure on the lower side curves towards the apex of the wing, and then about one third from the bottom curves towards the base.

25. **Ammophila chiriquensis.** (Tab. I. fig. 9, ♀ *.)

Nigra, aureo-pubescens et fusco-pilosa, sparse punctata; metathorace transverse striato; clypeo truncato; petiolo abdominis segmentisque 2° et 3° rufis; alis fere fuscis, apice fumatis. ♀.

Long. 23 millim.

Hab. Panama, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Head broader than the mesothorax; the face densely clothed with golden, the vertex with a thin short silvery, pubescence; sparsely covered with a longish fuscous or pale silvery hair. Front and vertex obsoletely punctured; front deeply depressed in the centre, a furrow in the middle, originating at the ocelli which are surrounded by a furrow; ocelli placed nearly in a triangle. Clypeus with a few large scattered punctures, truncated in the middle, slightly retreating, the furrow deep, wide, and uneven. Third antennal joint twice the length of the fourth. Pronotum with a)-shaped furrow, the lower part of which is much wider and deeper than the upper. Thorax finely and sparsely punctured; scutellum coarsely longitudinally striated; metanotum finely and closely transversely striated. The prothorax above the tubercles, a broad oblique band on the meso- and metapleuræ, and a spot on either side of the metanotum, covered with golden pubescence; the rest of the thorax bears a short silvery pile and has sparse greyish hair. The central furrow on the mesonotum is broad and indistinct, that on the prothorax is almost obsolete; a narrow keel runs down from the tegulæ. The second joint of the petiole is much thicker than the basal joint, and like it is finely longitudinally aciculated; the second joint is for the greater part black on the top.

* The genital organs figured on Tab. I. fig. 9 *a* do not belong to the male of this species, but to that of *A. alticola*.

b. *Legs more or less red.* (Species 26–28.)

26. **Ammophila varipes.** (Tab. I. figg. 17; 17 *a*, ♂.)

Ammophila varipes, Cresson, Proc. Ent. Soc. Phil. iv. p. 457 [1].

Hab. North America, Colorado [1].—Mexico, Northern Sonora (*Morrison*).

I believe I am correct in referring the specimen from Sonora to *A. varipes*. In this example the face, metanotum, and pleuræ are covered with a dense silvery pile; and the top of the thorax is sparsely clothed with silvery or cinereous hair. The clypeus is rounded, almost transverse in the centre. The thorax is rather strongly and closely punctured; the scutellum is rugose; the metanotum is rugosely punctured in the centre, obliquely striated at the sides. The four anterior legs are reddish, except the coxæ, trochanters, and the extreme base of the femora; the hind pair are black, except the apex of the femora, the base of the tibiæ, and the calcaria, which are reddish. The anterior legs are sparsely covered with long silvery-white hair; the middle legs bear but very little hair; the posterior tarsi are slightly spined; all the coxæ are thickly covered with a silvery pile; the posterior legs are hoary. The petiole is entirely black; the other segments are more or less black above. The second cubital cellule above is twice the length of the third and scarcely one fourth narrower above than below; the third cellule is half the length of the lower side above; the third transverse cubital nervure curves backwards at the middle.

27. **Ammophila comanche.** (Tab. I. fig. 14.)

Hab. Mexico, Northern Sonora (*Morrison*).

This species agrees rather closely with *A. varipes*, but is, I believe, distinct from it. The pile on the face is denser and thicker; on the thorax above it is quite dense; the metanotum is transversely striated; the four anterior femora are not black at the base; the hinder femora and tibiæ are for the greater part reddish beneath, as are also the tarsi; the abdomen has the petiole black; the second segment has a black line above and beneath at the base; the third segment is black in the middle; the four apical segments are black, except beneath; tegulæ red; the costa testaceous at the base; the second cubital cellule above is five times the length of the third (above it is as long as the space below between the first recurrent nervure and the second transverse cubital nervure); and the third cellule below is nearly four times the length of the top. Length 21 millim.

28. **Ammophila breviceps.**

Ammophila breviceps, Smith, Cat. Hymen. Ins. iv. p. 221 [1].

Hab. Mexico [1].

This species agrees in coloration with *A. varipes*, and *A. varipes* may indeed be a

variety of *A. breviceps*. The latter is smaller (8 lines as against $9\frac{1}{2}$), and has the mesothorax transversely striated (unless Smith, as is likely, has written mesothorax for metathorax; for he mentions *inter alia* that the mesothorax is punctured, and no mention is made of the metathorax at all).

Psammophila

II. *Petiole composed of only one joint.* (Species 29–37.)

29. **Ammophila montana.** (Tab. I. fig. 2, ♂.)

Nigra, capite et thorace dense fusco-pilosis; clypeo et facie argenteo-pilosis; abdominis segmentis 1° et 2° lateribus rufis; clypeis apice truncato; alis fere hyalinis, apice fumatis. ♂.
Long. 20 millim.

Hab. MEXICO, Ventanas in Durango 4000 feet (*Forrer*).

The hair on the head is longer than on the thorax, but is hardly so dense; the silvery pile on the face and clypeus is close, on the sides of the front it is sparser; the punctuation is sparse, but strong. Third antennal joint a little longer than the fourth. Thorax strongly punctured; metathorax opaque, rugosely punctured; scutellum punctured, a broad and deep depression at its base; the lateral and central furrows on the mesonotum shallow, not very distinct. Petiole curved, twice the length of the hind coxæ, the basal half sparsely punctured and haired. Legs pruinose, the coxæ punctured and covered with long pale hair.

30. **Ammophila jason.** (Tab. II. fig. 1, ♀.)

Nigra, punctata, dense nigro-pilosa; abdomine rufo; clypeo sinuato; alis fuliginosis. ♀.
Long. 21 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Head broad, almost shining, closely and strongly punctured; clypeus broadly projecting in the middle, the projection sinuated. Third antennal joint more than twice the length of the fourth. Thorax strongly punctured; metanotum opaque, transversely rugose; metapleuræ obliquely rugosely punctured, running into reticulations; sides of the prothorax strongly striolated; scutellum punctured, except in the centre, behind with some striolations; mesonotum broadly depressed laterally and in the middle; pronotum depressed in the centre. Petiole curved, nearly twice the length of the hind coxæ, punctured, and bearing some rather long hair at the base. Hind coxæ strongly punctured, sparsely covered with longish hair; anterior coxæ less strongly punctured, and with some coarse striolations on the lateral hollow; trochanters and femora with scattered hair; tibiæ sparsely, the tarsi thickly, spined. Wings with a violet tinge; third cubital cellule oblique, slightly narrowed at the top; first recurrent nervure recurved very shortly before the middle of the cellule.

31. **Ammophila alpestris.** (Tab. I. fig. 16, ♂; Tab. II. fig. 5.)

Nigra, dense et longe fusco-hirsuta; clypeo et facie dense argenteo-pilosis; abdominis segmentis 1°–3ᵐ rufis; alis fusco-hyalinis, violaceis, apice fumatis. ♂.
Long. 15–17 millim.

Hab. PANAMA, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Third antennal joint one half longer than the fourth. Head indistinctly, the thorax strongly, punctured; metanotum transversely rugosely punctured; centre of the pro- and mesonotum narrowly furrowed, the lateral furrows of the mesonotum narrow. Petiole slightly curved, nearly twice the length of the hind coxæ, at the base bearing long pale hair, and sparsely punctured. Legs densely pruinose, the coxæ, trochanters, and femora bearing long pale hair.

32. **Ammophila sonorensis.** (Tab. II. fig. 6.)

Nigra, dense pilosa, punctata; abdominis segmentis 1°–3ᵐ rufis, 4°–7ᵐ cæruleis; alis violaceis, apice fuliginosis. ♀.
Long. 14–18 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

Third antennal joint nearly twice the length of the fourth. Hair on the head and thorax rather long, dense, and black. Head and thorax almost shining, closely punctured; metanotum opaque, rugose; metapleuræ obliquely striolated and punctured; scutellum sparsely punctured, striolated laterally and at the apex; sides of the prothorax striolated; mesonotum indistinctly furrowed laterally and in the centre. Petiole scarcely one third longer than the hind coxæ; sparsely punctured, and covered with long black hair. Coxæ, trochanters, and femora sparsely covered with long black hair; tibiæ pruinose. First recurrent nervure received a little beyond the middle of the cellule.

The male has the clypeus rounded at the apex, and bears, as does also the face, a sparse silvery pile; and the petiole almost twice the length of the hind coxæ.

33. **Ammophila morrisoni.** (Tab. II. fig. 10, ♂.)

Nigra, punctata; capite et thorace dense et longe cinereo-pilosis; pedibus 4 anterioribus rufis, basi late nigris; abdomine nigro, medio late rufo; alis hyalinis, tegulis nigris; clypeo exciso. ♂.
Long. 22 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

The silvery-white hair is long, moderately dense, and almost uniformly distributed. The third antennal joint is more than one half longer than the fourth. The head and thorax are closely, but not very deeply, punctured; the scutellum bears some large punctures; the postscutellum is almost impunctate; the metanotum is coarsely transversely striated. There is no central furrow on the mesonotum. The petiole is entirely black; the second segment is lined with black above; the third segment is entirely red, the fourth red at the base. The petiole at the base and the

apical segment are aciculated. The legs are covered with a silvery-white pile, which is especially long and thick on the coxæ; the four anterior femora are black to the middle; the middle tarsi are fuscous towards the apex; the hind legs are entirely black, except the calcaria, which are red; the spines on the tarsi are sparse. Above the second cubital cellule is about one third longer than the third, and scarcely so long as the space between the first and second recurrent nervures; the second recurrent nervure is received quite close to the second transverse cubital nervure; the third cubital cellule is about one third longer above than below.

34. **Ammophila piceiventris.** (Tab. II. figg. 7; 8, var.)

Nigra, punctata, longe nigro-pilosa, tegulis abdomineque piceis; alis violaceis. ♀.
Long. 19 millim.

Hab. GUATEMALA, Quezaltenango 7800 feet (*Champion*).

The puncturing on the clypeus, face, and front close and strong, as also on the thorax; central part of the metanotum opaque, closely transversely punctured; metapleuræ strongly and coarsely punctured, running into reticulations; sides of the prothorax strongly obliquely striolated; scutellum strongly punctured laterally, the centre with some longitudinal striæ. Clypeus convex in the centre, the apex depressed at the base, almost transverse. Eyes parallel. Mandibles broadly piceous-red at the base. Third antennal joint three quarters longer than the fourth. The hair on the thorax is long and black; there is no pile. Petiole about one fourth longer than the hind coxæ, covered with long black hair, and sparsely punctured. Abdomen bare, the apex only sparsely clothed with hair, punctured beneath; penultimate segment beneath almost transverse. Coxæ (especially the posterior pair) strongly punctured and covered with long black hair; trochanters and femora more sparsely clothed with hair; tibiæ pruinose on the underside, sparsely spinose; tibiæ thickly spinose. The base of the tibiæ and the tarsi incline to piceous, as does also the clypeus. First transverse cubital nervure curved at the top; second cubital cellule one third the length of the bottom at the top, receiving the first recurrent nervure a little before the middle, the second not far from the apex, the cubital nervure being considerably angled where it is received; third transverse cubital nervure bent outwardly at the bottom, directed towards the base at the top, thus making the cellule narrower at the top than at the bottom.

The piceous colour on the abdomen is marked with black patches; the apical two segments are for the greater part black.

Other examples from Totonicapam, 8500 to 10,500 feet, are probably referable to the same species, but differ in being smaller (averaging 13 millim.), and deep black in colour without any trace of piceous or reddish coloration. This form shows variation in the intensity of the sculpture and in the shape of the second and third cubital cellules.

35. **Ammophila argentifrons.**

Ammophila argentifrons, Cresson, Proc. Ent. Soc. Phil. iv. p. 462 (1865) [1].
Ammophila mexicana, Saussure, Reise d. Novara, Hymen. p. 25 (1868) [2].

Hab. North America, Colorado [1].—Mexico, Cordova [2], Teshuitlan [2].

36. **Ammophila luctuosa.**

Ammophila luctuosa, Saussure, Reise d. Novara, Hymen. p. 26 [1]; ? Smith, Cat. Hymen. Ins. iv. p. 224 (1867) [2].

Hab. North America [2].—Mexico, Cordova [1], Orizaba [1], Teshuitlan [1], Chapultepec [1].

It is doubtful if this is identical with the North-American *A. luctuosa,* Smith. Saussure's species comes nearest to *A. piceiventris.*

37. **Ammophila quadridentata.**

Nigra, punctata, dense nigro-pilosa; abdomine rufo-testaceo; clypeo quadri-dentato; alis violaceo-fuliginosis. ♀.
Long. 24 millim.

Hab. Mexico, Ventanas in Durango 2000 feet (*Forrer*).

Head broad, rather long, densely covered with black hair, closely and strongly punctured; clypeus deeply incised in the middle, the incision bordered by a double tooth, and there is a nipple-like tooth on either side of this. Thorax densely pilose, the hair long and black; closely and strongly punctured; metanotum closely, transversely, and rugosely striolated in the middle, the sides obliquely and rugosely punctured, the punctures running into reticulations; mesonotum broadly depressed at the sides, the furrow in the middle narrow and only visible on the basal half; a furrow in the centre of the pronotum. Scutellum with large separated punctures, the apex more or less striolated. Petiole slightly curved, fully one fourth longer than the hind coxæ; irregularly blistered and punctured. Coxæ (especially the hinder pair) strongly punctured, and covered with long black hair; trochanters and femora sparsely haired.

PELOPŒUS.

Pelopœus, Fabricius, Syst. Piez. p. 202 (1804); Latreille, Hist. Nat. Ins. xiii. (1804); Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 378.

I am inclined to agree with Patton in separating *Chalybion* from *Pelopœus*; the latter has a black body with yellow markings, the clypeus bilobate, and the petiole as long as the thorax; *Chalybion,* again, has the body metallic blue, the clypeus tridentate, and the petiole hardly so long as the metathorax.

Pelopœus has a wide range over the globe, especially in the warmer regions, and some of its representatives are very widely distributed. The species construct their mud-nest frequently in rooms and outhouses, and feed their young upon spiders.

Kohl (Termés. füzetek, ix. p. 158) treats *Podium* and *Trigonopsis* as subgenera of *Pelopœus*. *Podium* differs from *Pelopœus* in the prothorax being produced into a neck; in the third cubital cellule extending beyond the apex of the radial cellule; in the eyes reaching nearly to the base of the mandibles; and in the middle coxæ being widely separated, and situated almost laterally. The antennæ are placed close to the base of the clypeus; the head is somewhat triangular; and the body is black, neither metallic nor with yellow markings. *Trigonopsis* agrees with *Podium* (and differs from *Pelopœus*) in the prothorax being elongated, and in the third cubital cellule extending beyond the radial; but it differs from *Podium* in the middle coxæ not being so widely separated, in the prothorax being much more elongate, and the head and apex of the abdomen triangular in shape, the head being greatly narrowed behind the eyes, the latter reaching the base of the mandibles. The body is metallic; the second recurrent nervure is usually interstitial.

1. **Pelopœus cæmentarius.** (Tab. II. fig. 9.)

Sphex cæmentaria, Drury, Exot. Ins. i. p. 105, t. 44. figg. 6, 8.
Pelopeus cæmentarius, Saussure, Reise d. Novara, Hymen. p. 29.
Sphex flavipunctata, Christ, Hymen. p. 301. 16, t. 30. fig. 1.
Sphex lunata, Fabr. Ent. Syst. ii. p. 203.
Pelopœus lunatus, Fabr. Syst. Piez. p. 203. 4.
Pelopœus affinis, Fabr. loc. cit. p. 205. 5.
Pelopœus flavipes, Fabr. loc. cit. p. 202. 18; Smith, Cat. Hymen. Ins. iv. p. 233.
Pelopœus architectus, Lepel. de St.-Fargeau, Hist. Nat. Ins., Hymén. iii. p. 313.
Pelopœus solieri, Lepel. de St.-Fargeau, loc. cit. p. 318; Smith, Cat. Hymen. Ins. iv. p. 231.
Pelopœus canadensis, Smith, loc. cit. p. 233.
Sphex jamaicensis, Fabr. Ent. Syst. ii. p. 203.
Pelopœus jamaicensis, Fabr. Syst. Piez. p. 204.

Hab. North America, Canada, United States.—Mexico, Ventanas 2000 feet, Presidio (*Forrer*); British Honduras (*Blancaneaux*); Nicaragua, Chontales (*Janson*); Panama (*Boucard*).—Brazil; Antilles.

The numerous specimens from our region do not show much variation in colour, the pronotum broadly above, the tubercles, tegulæ, scutellum, postscutellum, a mark on the side of the metathorax, the median segment, and a broad band on the second abdominal segment, having the usual yellow markings. There is a slight variation in the amount of yellow on the legs; and the wings vary somewhat in tint.

2. **Pelopœus vindex.**

Pelopœus vindex, Lepel. de St.-Fargeau, Hist. Nat. Ins., Hymén. iii. p. 317.
Pelopeus vindex, Saussure, Reise d. Novara, Hymen. p. 31 [1].
Pelopœus figulus, Dahlbom, Hymen. Eur. i. p. 23; Smith, Cat. Hymen. Ins. iv. p. 234.
Pelopœus chilensis, Spinola in Gay's Hist. fisica y polit. de Chile, vi. p. 395.

Pelopœus assimilis, Dahlbom, Hymen. Eur. i. p. 23.
Pelopœus annulatus, Cresson, Proc. Ent. Soc. Phil. 1865, p. 135 [2].

Hab. NORTH AMERICA.—MEXICO, Tampico [1], Cordova [1], Orizaba [1].—SOUTH AMERICA, Brazil, Chili, Patagonia; ANTILLES, Cuba [2].

3. **Pelopœus histrio.** (Tab. II. figg. 11; 11 *a*, ♂.)

Pelopœus histrio, Lepel. de St.-Fargeau, Hist. Nat. Ins., Hymén. iii. p. 316.
Pelopeus histrio, Saussure, Reise d. Novara, Hymen. p. 32 [1].
Pelopœus bimaculatus, Lepel. de St.-Fargeau, loc. cit. p. 319.
Pelopœus fistularius, Dahlbom, Hymen. Eur. i. p. 23.

Hab. MEXICO [1], Atoyac in Vera Cruz (*Schumann*); GUATEMALA, El Reposo, Pantaleon, San Gerónimo, Panzos in Vera Paz (*Champion*).—SOUTH AMERICA [1], Cayenne, Brazil.

CHALYBION.

Chalybion, Dahlbom, Hymen. Europ. i. p. 21 (1845).

i. *Wings dark-violaceous; body covered with black hair.*

1. **Chalybion cæruleum.**

Sphex cærulea, Linnæus, Syst. Nat. i. p. 941.
Pelopeus cæruleus, Saussure, Reise d. Novara, Hymen. p. 26 [1].
Chalybion cæruleum, Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 378.

Hab. NORTH AMERICA, Middle and Southern States [1].—MEXICO, Cordova [1], Jaral in Guanajuato (*Schumann*).

2. **Chalybion zimmermanni.** (Tab. II. figg. 12; 12 *a*, ♂.)

Pelopœus zimmermanni, Dahlbom, Hymen. Eur. i. p. 22 [1]; Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 379.
Pelopeus zimmermanni, Saussure, Reise d. Novara, Hymen. p. 26 [2].

Hab. NORTH AMERICA, Carolina [1].—MEXICO, Ventanas (*Forrer*), Cordova [2], Michoacan [2], Valladolid in Yucatan (*Gaumer*).

C. (*Pelopeus*) *californicum,* Saussure (Reise d. Novara, Hymen. p. 26), is no doubt identical with this species.

ii. *Wings pellucid, smoky at the apex; body covered with cinereous hair.*

3. **Chalybion aztecum.**

Pelopeus aztecus, Saussure, Reise d. Novara, Hymen. p. 26 [1].

Hab. MEXICO, Atoyac in Vera Cruz (*Schumann*), Tampico [1], Jalapa [1], Michoacan [1], Teapa in Tabasco (*H. H. Smith*).

This I consider to be probably conspecific with *C. zimmermanni*. In the latter I find some variation in the colour of the wings and pubescence; and in the examples I regard as its male the wings are hyaline, smoky at the apex, and the pubescence is cinereous. In fact the difference in the colour of the wings and pubescence is doubtless a sexual character. Out of nearly thirty males before me only one has the wings entirely violaceous.

TRIGONOPSIS.

Trigonopsis, Perty, Del. Anim. Art. Brasil. p. 142 (1830–1834).

This is exclusively a Neotropical genus and contains few species.

1. **Trigonopsis violaceus.** (Tab. II. fig. 13.)

Trigonopsis violaceus, Smith, Ann. & Mag. Nat. Hist. 2nd ser. vii. p. 31 (1851)[1].

Hab. GUATEMALA, San Juan in Vera Paz (*Champion*); PANAMA, David in Chiriqui (*Champion*).—BRAZIL [1], Pará [1].

PODIUM.

Podium, Fabricius, Syst. Piez. p. 183 (1804).

This is also treated as a subgenus of *Pelopœus* by Kohl (Termés. füzetek, ix. p. 158).

The species are exclusively American, chiefly Neotropical.

1 (8). Legs black.
2 (7). Second cubital cellule not narrowed at the top; prothorax and petiole not very elongate; second recurrent nervure received a little past the middle.
3 (6). Wings yellow, the second transverse cubital nervure curved.
4 (5). Tegulæ black; petiole (♀) more than twice the length of the hind coxæ; pubescence on the metanotum not golden . . . . . *albovillosum.*
5 (4). Tegulæ red; petiole (♀) the length of the hind coxæ; pubescence on the metanotum golden . . . . . *luteipenne.*
6 (3). Wings violaceous, spotted with fuscous; second transverse cubital nervure straight . . . . . *bugabense.*
7 (2). Second cubital cellule narrowed at the top; second recurrent nervure received before the middle of the cellule; prothorax and petiole elongate . . . . . *bellum.*
8 (1). Legs red (second cubital cellule subtrigonal, the recurrent nervures received at the base and apex) . . . . . *rufipes.*

1. **Podium albovillosum.** (Tab. II. figg. 14, 14 *a*, 14 *b*, ♂.)

Nigrum, albo-pilosum; metanoto transverse punctato; alis flavis, apice fumatis. ♂ ♀.
Long. 30–34 millim.

Hab. PANAMA, Bugaba (*Champion*).

Head and thorax sparsely punctured, the mesothorax and scutellum more shining and almost impunctate; metanotum almost opaque, closely transversely punctured and deeply and widely sulcated down the middle. Clypeus in male produced in the middle, and deeply incised there, the sides of the incision produced into two teeth; in the female not so much produced, the incision very slight, and the sides scarcely produced into teeth. Petiole rather more than twice the length of the hind coxæ, villose. Tibiæ and tarsi covered with a close short downy pile, the tibiæ bearing a few bristles. The first recurrent nervure is received a little before the first transverse cubital nervure, the second a little beyond the middle of the cellule.

2. **Podium luteipenne.** (Tab. II. figg. 15, 15 *a*.)

Pepsis luteipennis, Fabr. Syst. Piez. p. 210.

Podium luteipenne, Dahlbom, Hymen. Eur. i. p. 23; Lepel. de St.-Fargeau, Hist. Nat. Ins., Hymén. iii. p. 324; Smith, Cat. Hymen. Ins. iv. p. 235, t. 6. fig. 2 [1].

Podium flavipenne, Latr. Gen. Crust. et Ins. iv. p. 59.

Podium latreillei, Spinola, Mem. Accad. Torino, xiii. ser. 2, p. 51.

Hab. Panama, San Feliz (*Champion*).—South America, Cayenne [1], Brazil [1].

A smaller species than *P. albovillosum*; differing otherwise in having the legs more or less red, the tegulæ red, the thorax not so densely pilose, and the pile on the metathorax with a golden hue, the incision in the clypeus deeper and at the middle the clypeus does not project so much, the face covered with a dense silvery-white pile, the petiole shorter (in female), not being much longer than the hind coxæ, the abdomen longer and narrower, and generally it is a more slender-looking insect.

3. **Podium bugabense.** (Tab. II. figg. 16, 16 *a*.)

Nigrum, longe nigro-pilosum, clypeo octo-dentato; metanoto punctato; alis fere hyalinis, fusco-maculatis. Long. 24 millim.

Hab. Panama, Bugaba (*Champion*).

Head bearing rather long black hairs; the cheeks sparsely covered with silvery pile. Clypeus broadly rounded, armed in the centre with eight short stout teeth. Prothorax not much longer than broad, furrowed in the centre above; covered with a dense silvery pile, besides the long hair. Pro- and mesonotum very sparsely punctured; the pleuræ rather strongly punctured; metanotum closely (but not very strongly) punctured, broadly and deeply furrowed down the centre, the furrow transversely striated. Petiole short, about one third longer than the hind coxæ, curved, about one third of the length of the abdomen. Coxæ and femora sparsely covered with long hair; the tibiæ beneath with a dense fulvous pile; tarsi rather strongly spinose. The second cubital cellule of equal length throughout, above a little longer than the third cellule; the first recurrent nervure is received a little in front of the second, the second recurrent at an equal distance before the third transverse cubital nervure.

4. **Podium bellum.** (Tab. II. figg. 17, 17 *a*.)

Nigrum, sparse villosum et pilosum; clypeo inciso, bidentato; metanoto transverse striato; cellula cubitali 2ª latiore quam longiore; alis fusco-maculatis. ♀.
Long. 21 millim.

Hab. PANAMA, Bugaba (*Champion*).

Face rather densely covered with a silvery-white pubescence; the front and vertex almost glabrous, impunctate; the incision in the clypeus is broad and deep, the teeth stout. Pro- and mesothorax sparsely punctured, shining, covered (but not very thickly) with rather long, soft, white hair, the metanotum with a shorter, closer, and thicker pile. Metanotum punctured and transversely striated, the centre very slightly depressed. Prothorax narrowed in front, longer than broad, nearly as long as the mesothorax to the middle of the scutellum, its sides behind obliquely striolated. Abdomen slender, acuminate, scarcely one fourth longer than the petiole. Petiole curved, three times the length of the hind coxæ, sparsely pilose, shining. Legs downy, the coxæ with rather long pale hairs, the tibiæ almost without bristles, the tarsi with stout bristles. Wings smoky-violaceous, clouded at the transverse basal nervure, below the stigma at the second cubital cellule, and at the apex; second cubital cellule broader than long, narrowed above; the first recurrent nervure almost interstitial, the second received before the middle of the cellule.

This species forms a transition to *Trigonopsis*, the only difference being that the head is not so triangular.

5. **Podium rufipes.** (Tab. II. figg. 18, 18 *a*.)

? *Podium rufipes*, Fabr. Syst. Piez. p. 183.
Podium rufipes, Saussure, Reise de Novara, Hymen. p. 36 [1]; Cresson, Trans. Amer. Ent. Soc. iv. p. 211 [2].

Hab. NORTH AMERICA, Texas [2].—MEXICO [1], Atoyac in Vera Cruz (*Schumann*), Temax in North Yucatan (*Gaumer*).—BRAZIL.

In the male of this species the head and thorax are covered rather densely with long black hair; the clypeus and cheeks have a velvety pile; the clypeus is incised in the middle, and has a tooth on either side of the incision; the mandibles are black; the wings are much more suffused with fuscous and have a violaceous tinge, and the nervures and tegulæ are blackish.

The Brazilian *P. denticulatum*, Smith, is very closely allied to *P. rufipes* (if the two be not one and the same species), but differs from it in the clypeus having six teeth in the female; as in *P. rufipes*, the clypeus in the male has only two teeth and the body is more pubescent in the male than in the female.

SPHEX.

Sphex, Fabricius, Ent. Syst. ii. p. 198 (1793) (partim); Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 382.
Chlorion, Latreille, Hist. Nat. Crust. et Ins. iv. p. 57 (1809) (partim); Patton, loc. cit. p. 379.
Pronæus, Latreille, loc. cit. iv. p. 56 (1809); W. Saunders, Trans. Ent. Soc. Lond. iii. p. 58 (1841).
Prionony x, Dahlbom, Hymen. Eur. i. p. 28 (1843); Patton, loc. cit. p. 384.
Harpactopus, F. Smith, Cat. Hymen. Ins. iv. p. 264 (1856).
Isodontia, Patton, loc. cit. p. 380 (1881).

Sphex, as here defined, includes *Chlorion*, *Isodontia*, *Sphex* (sensu stricto, auct.), *Harpactopus*, and *Prionony x*. The characters on which these genera are grounded merge so gradually into each other that they do not furnish a rigid means of definition; and, moreover, if these names be accepted as valid, it would inevitably necessitate the creation of other genera. Under these circumstances I quite agree with Kohl and André in sinking *Isodontia*, *Chlorion*, *Harpactopus*, and *Prionony x* to sectional value. The genus is of almost world-wide distribution; and the species, so far as is known, prey on Orthoptera.

i. *Tarsal claws unidentate.* (Chlorion and Pronæus.)

This section is representative of the Oriental region and of America. The species are large and metallic blue or green or violet. The tarsal claws are unidentate; the clypeus has three teeth in the female and five in the male; and the petiole is somewhat longer than the hind coxæ. The species are few in number. Cresson treats *Chlorion* as a distinct genus.

1. **Sphex cærulea.**

Sphex cærulea, Drury, Exot. Ins. ii. p. 75, t. 39. f. 8.
Chlorion cæruleum, Smith, Cat. Hymen. Ins. iv. p. 238[1]; Riley, 1st Report U. S. Ent. Comm. p. 319, fig. 58 (1878)[2].
Chlorion cyaneum, Dahlbom, Hymen. Eur. i. p. 24.

Hab. North America [1 2].—Mexico [1].

S. cærulea feeds on spiders and also on locusts. Riley[2] states that one of his assistants, Mr. A. N. Godfrey, saw one sting a pupa of the Rocky-Mountain locust (*Caloptenus spretus*), bury it in its nest, and lay an egg at the point of junction between the hind femur and the body.

ii. *Tarsal claws bidentate.* (Sphex *and* Isodontia.)

A. *Petiole as long as or scarcely longer than the hind coxæ; radial cellule extending beyond the third cubital cellule; clypeus in female crenate or with short teeth.*
(Sphex, *Cresson.*)

2. **Sphex erythroptera.** (Tab. III. figg. 1, ♀; 1 *a* ♂.)

Nigra, nigro-pilosa; alis rufo-flavis, apice fere fumatis. ♂ ♀.
Long. 30–34 millim.

Hab. Mexico, Orizaba (*H. H. Smith*), Temax in North Yucatan (*Gaumer*); British Honduras, Cayo (*Blancaneaux*); Guatemala, Las Mercedes 3000 feet, Volcan de Atitlan 2500 to 3500 feet, San Gerónimo (*Champion*); Costa Rica, Cache (*Rogers*); Panama, Volcan de Chiriqui 3000 feet (*Champion*).

Antennæ a little longer than the thorax; the third joint two and a quarter times longer than the second. Head subopaque, densely covered with longish black hair; apex of the clypeus projecting, slightly incurved in the centre; face and clypeus with scattered punctures; eyes almost parallel along the face, slightly converging at the top. Mandibles aciculated, the basal half with large punctures, the central part more or less obscure rufous. Thorax sparsely clothed with hair and thickly covered with dense, black, velvety pile; top of the pronotum rather sharply raised and separated from the mesonotum, the centre slightly depressed; centre of the mesonotum furrowed; scutellum impunctate, a broad shallow depression down the middle; postscutellum with a more or less broad depression in the centre, making it almost bituberculate; metanotum opaque, coarsely alutaceous, a broad furrow in the centre, the furrow broadest at the apex. Petiole shorter than the hind coxæ, shining, sparsely covered with long black hairs. Abdomen scarcely so long as, and narrower than, the thorax; shining, impunctate at the base; the apex sparsely punctured and bearing long hair. Posterior tibiæ and tarsi behind clothed with a fulvous pile; rather strongly pilose. First and second transverse cubital nervures very oblique, the first slightly curved, the second quite straight; the third at the base directed outwardly below the middle, then directed sharply towards the base of the cellule (above, the top of the cellule is less than the space bounded by the second transverse and second recurrent nervures); the second recurrent nervure is received a little before the middle of the cellule; the first recurrent nervure is received in the apical third.

Under the name of *Sphex rufipennis*, Fabr., a species has been recorded from Persia, India, North Africa, and South America. This species does not appear to be separable from *S. erythroptera* by any very tangible character, and I should have been inclined to consider it identical with the Indian one, which is certainly the *S. rufipennis*, Fabr. (=*S. diabolicus*, Smith), if the genital armature of the males were not so markedly

different. It is, however, quite possible that *S. erythroptera* is identical with *S. rufipennis*, Kohl (nec *rufipennis*, Fabr.=*luteipennis*, Mocsáry), a species also known from India and North Africa, and, as Kohl informs me, from Venezuela; or, at least, a form which cannot be separated from it. Kohl tells me also that the true *S. rufipennis*, Fabr., differs from the species he has described under that name (Termés. füzetek, ix. p. 198) in having the postscutellum bituberculate, the antennæ thinner, and the wings black at the base. The furrow in the postscutellum varies in width and depth in the specimens from our region, and the wings are sometimes blackish at the base (but not to the same extent as in the form *S. diabolicus*, Smith); consequently I cannot look upon these characters as altogether satisfactory for separating the two. In view of the fact that the male-armature is so distinct in *S. rufipennis*, Fabr. (which was first described from India), I have thought that less confusion will be created by giving our species a distinct name, leaving it for further research to decide if it is identical with *S. luteipennis*, Mocsáry.

3. **Sphex beata.** (Tab. III. figg. 2, ♀; 2 *a*, ♂.)

Nigra, femoribus tibiisque anticis rufis, capite, pro- et mesonoto dense aureo-villosis, metanoto dense albo-villoso; alis violaceis. ♂ ♀.

Long. 30 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*); GUATEMALA, Pantaleon 1700 feet (*Champion*).

On the head the golden pile is very dense, except on the centre of the clypeus, and on the vertex and occiput (perhaps rubbed off); the pronotum in front is bare, and the centre of the mesonotum also. Eyes parallel, but very slightly converging at the top. Clypeus with some large punctures, the apex rounded, the furrow wide and deep; basal half of the mandibles reddish, aciculated. Mesonotum slightly depressed towards the apex in the centre, as is also the pronotum; metanotum opaque, coarsely transversely aciculate, densely covered with a soft, white, woolly pubescence, and slightly depressed in the centre towards the apex. Petiole as long as the hind coxæ, sparsely covered with white hair. Apex of the abdomen slightly punctured, and sparsely covered with long hair.

4. **Sphex hirsuta.** (Tab. III. figg. 3, ♀; 3 *a*, ♂.)

Sphex hirsutus, Saussure, Reise d. Novara, Hymen. p. 40 (♂)[1].

Hab. MEXICO (*Sallé*), Orizaba [1], Cordova [1] (*Sumichrast*).

The female has been captured in Mexico by Sallé. It has the mesonotum in the centre and the pleuræ less strongly pilose than in the male; the tegulæ rufous (in the male they are more or less blackish); the labrum keeled down the centre; and the mandibles broadly black at the base (this being also the case, but to a less extent, in the male).

5. **Sphex guatemalensis.** (Tab. III. figg. 4, ♀; 4 *a*, ♂.)

Nigra, capite et thorace longe aureo-hirtis, abdomine subtus, basi mandibularum, femoribus subtus late, geniculis, tibiis tarsisque, rufis; alis fusco-hyalinis, apice fumatis, fere violaceis. ♂ ♀.
Long. 28 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

The golden hair is very bright and dense on the face, clypeus, front, pronotum above, prosternum, sides of mesonotum, mesopleuræ below the tegulæ, tubercles, and on metanotum; on the rest of the thorax it is thinner and fulvous. Middle of the clypeus projecting, incised in the centre. Scutellum comparatively bare, deeply sulcated in the centre, and more shining than the mesonotum. A furrow in the centre of the metanotum. Petiole as long as the hind coxæ, densely covered with pale golden hair, sulcated in the centre above. Abdomen with an olive tinge, sericeous. Coxæ and trochanters densely covered with a golden pile, the tibiæ and tarsi also pilose.

The male has, as usual, the hair on the head and thorax much thicker and longer; the abdominal segments reddish along the sides and at the extreme base and apex above; and the clypeus truncated at the apex and not produced in the middle. The amount of red on the femora varies.

S. guatemalensis may be known from *S. hirsuta* by the wings not being yellow and having the nervures black, the petiole sulcated, and the abdomen reddish beneath, and also by the much brighter golden pile, &c.

6. **Sphex tinctipennis.** (Tab. III. fig. 5, ♀.)

Nigra, capite thoraceque longe fusco-pilosis, facie argenteo-pilosis; clypeo truncato; alis flavo-fuscis, apice fumatis. ♀.
Long. 20 millim.

Hab. GUATEMALA, El Tumbador 2500 feet (*Champion*); COSTA RICA, Cache (*Rogers*).

Sparsely punctured, shining; metanotum opaque, finely transversely striated. Hair longish, varying in tint from pale to fuscous, but inclining to fulvous on the metanotum; the tubercles, a stripe along the top of the pronotum, the metanotum at the base, and a spot on either side of the apex of the latter, silvery. Antennæ longer than the thorax, the fourth joint about half the length of the third. Apex of the clypeus projecting, almost truncated, but indistinctly waved. Eyes slightly converging at the apex. Frontal furrow small, narrow, shallow. Furrow in the centre of the mesonotum indistinct, but along the sides broad, shallow; scutellum indistinctly depressed in the centre. Petiole stout, curved, and as long as the hind coxæ; sparsely covered with long pale hairs. Abdomen sparsely clothed at the base with soft pale hair, at the apex still more sparsely with longer fuscous hair. Legs more or less pruinose, the coxæ bearing longish silvery hair, the trochanters and femora more sparsely clothed with hair. Second cubital cellule a little wider above than beneath; the third at the top about one fifth of the length of the bottom, being there less than the space bounded by the second transverse cubital and the second recurrent nervures.

7. **Sphex chichimeca.** (Tab. III. figg. 6, 6 *a*, ♂.)

Sphex chichimecus, Saussure, Reise d. Novara, Hymen. p. 40[1].

Hab. MEXICO, Orizaba[1]; HONDURAS, Ruatan Island (*Gaumer*).

A specimen from Honduras (presumably identical with *S. chichimeca*) has the wings deep violaceous throughout and hardly fainter in tint towards the apex; the apical ventral segments thickly covered with rather long fulvous hair; and the petiole a little longer than the hind coxæ.

8. **Sphex singularis.** (Tab. III. figg. 7, 7 *a*, ♂.)

Sphex singularis, Smith, Cat. Hymen. Ins. iv. p. 261 (♂)[1].

Nigra, longe fulvo- vel aureo-hirta; abdomine sericeo, basi interdum rufo-maculata; alis hyalinis, apice fumatis. ♂.
Long. 18–21 millim.

Hab. MEXICO, Presidio (*Forrer*), Teapa in Tabasco (*H. H. Smith*); GUATEMALA, San Gerónimo (*Champion*); HONDURAS[1]; PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Antennæ as long as the thorax, thickened towards the apex, covered with a sericeous pile; the fourth joint scarcely half the length of the third, and shorter than the fifth. Face densely covered with long golden, the front and vertex more sparsely with fulvous, hair; clypeus almost truncate at the apex; vertex and front opaque, closely aciculate. Thorax opaque, closely aciculate; a line on the top of the pronotum, the tubercles, a line at the base of the metanotum, an oblique one along the metapleuræ, and a spot on either side of the metanotum, silvery; the hair pale fulvous, long and dense, especially on the metanotum; the furrow on the mesonotum shallow; scutellum convex, without depression in the centre. Petiole a little longer than the hind coxæ; silvery-pilose, and covered with long pale hair. Abdomen with a bluish tinge, sericeous, the base and apex bearing fuscous hair; the sides at the base of the first and second segments rufous; a tuft of golden hair on either side of the apical segment. Coxæ densely covered with silvery pile, and with long pale fulvous hair; trochanters, femora, and tibiæ sericeous; calcaria, tibial spines, and the brush at the base of the metatarsus, reddish. Second cubital cellule nearly equal in width at the top and bottom; the third much narrowed at the top, being there scarcely half the length of the space bounded by the second recurrent and second transverse cubital nervures; first recurrent nervure received quite close to the second transverse cubital.

So far as Smith's description[1] goes, it only differs from the specimens I have described in the third cubital cellule being "subpetiolate."

9. **Sphex tepaneca.**

Sphex tepanecus, Saussure, Reise d. Novara, Hymen. p. 41, t. 2. fig. 23 (♂)[1].

Hab. MEXICO, Mextitlan[1].

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10. **Sphex mexicana.**

Sphex mexicana, Taschenberg, Zeitschr. ges. Nat. Sachs. Thür. xxxiv. p. 416 (1869)[1].

Hab. Mexico[1].

11. **Sphex ichneumonea.** (Tab. III. figg. 8, ♀; 8 *a*, ♂.)

Sphex ichneumonea, Linn. Syst. Nat. i. p. 959; Fabr. Ent. Syst. ii. p. 207; Dahlbom, Hymen. Eur. i. p. 26; Lepel. de St.-Fargeau, Hist. Nat. Ins. Hymen. iii. p. 346; Smith, Cat. Hymen. Ins. iv. p. 261[1]; Packard, Guide to the Study of Ins. p. 167 (1869).
Sphex dorsalis, Lepel. de St.-Fargeau, loc. cit. p. 347; Smith, Trans. Ent. Soc. Lond. 1862, p. 36[2].
Sphex micans, Taschenberg, Zeitschr. ges. Nat. Sachs. Thür. xxxiv. p. 419.
Sphex crœsus, Lepel. de St.-Fargeau, loc. cit. p. 351; Smith, Cat. Hymen. Ins. iv. p. 262[3].

Hab. North America[1 3].—Mexico[3], Orizaba (*F. D. G.*), Atoyac in Vera Cruz (*Schumann*), Teapa in Tabasco (*H. H. Smith*), Valladolid in Yucatan (*Gaumer*); Guatemala, El Reposo, Zapote, San Gerónimo (*Champion*); Nicaragua, Chontales (*Belt*); Costa Rica, Cache (*Rogers*); Panama, Bugaba, Volcan de Chiriqui (*Champion*), Aspinwall[2]. —South America, Cayenne[2], Ega[2], Santarem[2].

This is a somewhat variable species in size and coloration. The tegulæ are usually red, but sometimes verge into blackish; the amount of red on the abdomen varies in extent, and the apex is sometimes more or less of that colour, and the petiole occasionally shows traces of red; the femora are sometimes lined above with black in both sexes; and the colour of the wings varies in intensity. In the male the hind tibiæ are usually lined behind with black; and the tarsi are more or less black. In some examples the hair inclines to cinereous in tint, but this is perhaps due to discoloration.

On the habits of this species, Mr. Stretch says:—"From the sandy embankments of the railway at Aspinwall, it constructs a long burrow perpendicularly into the hard sand. I saw it bring a grasshopper as large as itself, with great difficulty, to the entrance of its burrow; laying it down, it retreated, apparently to see that all was ready, and then, re-emerging, seized the grasshopper and backed into its hole" (*cf.* Smith, Trans. Ent. Soc. Lond. 1862, p. 36).

Packard (*loc. cit.*) gives the following account of its mode of life:—

"In the last week of July, and during August and early in September, we noticed nearly a dozen of these wasps busily engaged in digging their holes in a gravelly walk. In previous seasons they were more numerous, burrowing into grassy banks near the walk. The holes were from four to six inches deep. In beginning its hole, the wasp dragged away with its teeth a stone, one half as large as itself, to a distance of eight inches, while it pushed away others with its head. In beginning its burrow it used its large and powerful jaws almost entirely, digging to the depth of an inch in five minutes, completing its hole in about half an hour. After having inserted its head into the hole, where it loosened the earth with its jaws, and threw out the earth with its jaws

and fore legs, it would retreat backwards and push the dirt still further from the mouth of the cell with its hind legs. In cases where the further progress of the work was stopped by a stone too large for the wasp to remove or dig round, it would abandon it and begin a new hole. Just as soon as it reached the required depth, the wasp flew a few feet to the adjoining bank, and falling upon an *Orchelimum vulgare* or *O. gracile* (two common grass-green katydid-like grasshoppers, about an inch long) stung and paralyzed it instantly, bore it to its nest and was out of sight for a moment, and while in the bottom of its hole must have deposited its egg in its victim. Reappearing, it began to draw the sand back into the hole, scratching it in quite briskly by means of its fore spiny tarsi, while standing on its two hind pairs of legs. It thus threw in half an inch of dirt upon the grasshopper and then flew off. In this way one *Sphex* will make two or three such holes in an afternoon. The walk was hard and composed of coarse sea-gravel, and the rapidity with which the wasp worked her way in with tooth and nail was marvellous."

B. *Petiole more than twice the length of the hind coxæ; radial cellule not extending beyond the third cubital cellule; clypeus in female usually with a slight notch in the middle and a small tooth on each side of it.* (Isodontia, *Patton.*)

12. **Sphex azteca.** (Tab. III. figg. 9, 9 *a*, ♂.)

Sphex aztecus, Saussure, Reise d. Novara, Hymen. p. 38, t. 2. fig. 22 (♀)[1].

Hab. MEXICO, Cordova [1], Valladolid in Yucatan (*Gaumer*).

13. **Sphex costipennis.** (Tab. III. fig. 10, ♂.)

Sphex costipennis, Spinola, Mem. Accad. di Torino, xiii. p. 54 (1853) (♀)[1]; Saussure, Reise d. Novara, Hymen. p. 39[2].

Sphex petiolata, Smith, Cat. Hymen. Ins. iv. p. 259 (♂)[3]; Taschenberg, Zeitschr. ges. Nat. Sachs. Thür. xxxiv. p. 417[4].

Hab. GUATEMALA, San Gerónimo, El Reposo 800 feet (*Champion*); COSTA RICA, Cache (*Rogers*); PANAMA, Bugaba 800 to 1500 feet (*Champion*).—GUIANA, Surinam [2]; BRAZIL, Novo Friborgo [4], Pará [1 2 3].

14. **Sphex apicalis.**

Sphex apicalis, Harris, Ins. of Massachusetts [1]; Smith, Cat. Hymen. Ins. iv. p. 262 (♂)[2]; Saussure, Reise d. Novara, Hymen. p. 38 (♂ ♀)[3].

Sphex apicalis, var. *mexicana,* Saussure, loc. cit.[4]

Sphex philadelphica, Lepel. de St.-Fargeau, Hist. Nat. Ins. Hymen. iii. p. 340[5].

Isodontia philadelphica, Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 380[6].

Hab. NORTH AMERICA, United States [1 2 3 5 6].—MEXICO, Orizaba [4], Jalapa [4], Cordova [4].

Saussure says that his var. *mexicana* does not differ in any essential particulars from

S. nigella, Smith (Cat. Hymen. Ins. iv. p. 255), from Shanghai ; Kohl (Termés. fuzetek, ix. p. 193) also regards the two as possibly identical, and records *S. nigella* from Swan River.

15. **Sphex robusta.** (Tab. III. fig. 11, ♂.)

Nigro-cærulea, sparse punctata, breviter pilosa ; alis violaceis. ♂ ♀.
Long. 23 millim.

Hab. Mexico, Atoyac in Vera Cruz (*Schumann*), Temax in North Yucatan (*Gaumer*).

Antennal joints somewhat thickened towards the base and apex; the third joint much thinner than the others, and fully one quarter longer than the fourth. Head large, not dilated behind the eyes, but largely developed there; sparsely punctured; the vertex shining, bearing a few long hairs and almost devoid of pubescence; front more thickly clothed with hair, and bearing a silvery pubescence; clypeus, face, and cheeks densely silvery-pubescent, and thickly covered with long black hair, the hair becoming rufous on the apex of the clypeus. Apex of the clypeus with two stout teeth in the middle, the teeth separated by an incision as broad as themselves; mandibles shining, broadly excavated at the base on the outer side, the apical tooth large and blunt. Thorax punctured, the metathorax very closely and transversely so and opaque; the mesonotum covered with a rather short sparse griseous pubescence, the pleuræ more thickly pubescent; the metapleuræ densely covered with greyish hair; the metanotum bearing long blackish hair, the pleuræ closely, almost rugosely, punctured; scutellum shining, sparsely punctured, slightly depressed in the middle. Petiole hardly twice the length of the hind coxæ. Abdomen narrow, almost glabrous, as long as the thorax; the apical segment with a few blackish hairs, and irregularly punctured. Coxæ punctured and bearing some pale hairs; femora sparsely punctured; tibiæ and tarsi with the spines stout, blunt; the metatarsal brush rufous. The wings are paler towards the apex; the second cubital cellule receives the recurrent nervure near the apex, and is of nearly equal width throughout; the third cubital cellule receives the second recurrent nervure at a somewhat greater distance from the second transverse cubital nervure; the radial cellule extends a little beyond the third cubital.

In the male the clypeus has a slight indentation in the middle; the head and thorax are clothed with rather long erect pale hair (much longer and thicker than in the female); the petiole is a little longer; the apical four ventral segments bear tufts of hair in the centre; and the wings are clearer posteriorly.

iii. *Tarsal claws* 5-*dentate.* (Priononyx, *Dahlbom.*)

16. **Sphex thomæ.** (Tab. III. figg. 12, ♀; 12 *a*, ♂.)

Sphex thomæ, Fabr. Ent. Syst. ii. p. 199.
Pepsis thomæ, Fabr. Syst. Piez. p. 209.
Priononyx thomæ, Dahlbom, Hymen. Eur. i. p. 28; Smith, Cat. Hymen. Ins. iv. p. 265[1]; Saussure, Reise d. Novara, Hymen. p. 43[2]; Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 384[3].

Hab. North America, United States [1 2 3].—Mexico, Presidio (*Forrer*), Michoacan [2]; Panama, Volcan de Chiriqui 2000 to 6000 feet (*Champion*).—South America [1], Brazil [1], Amazons [1], Buenos Ayres [2], Monte Video [2]; Antilles [2], St. Thomas [1], Jamaica [1], Cuba [1].

Fam. AMPULICIDÆ.

AMPULEX.

Ampulex, Jurine, Nouv. Méth. de Class. les Hymén. et les Dipt. p. 132 (1807).

This genus was founded on *Chlorion compressum*, Fabr., and *Ampulex fasciata*, Jurine. The former has four distinct cubital cellules, and the body shining metallic green, coppery, or blue; while the latter has only three cubital cellules, and the body is not metallic or blue or green. *A. fasciata* appears to me to belong to the genus *Rhinopsis*, Westw., of which we have one species in our region. *Ampulex* is found in the Oriental, Ethiopian, and Neotropical regions; it preys on species of Blattidæ.

1. **Ampulex angusticollis.** (Tab. III. figg. 13, ♀; 13 *a*, ♂.)

Ampulex angusticollis, Spinola, Ann. Soc. Ent. Fr. x. p. 108 (♀) [1]; Smith, Cat. Hymen. Ins. iv. p. 271 [2].

Chlorion angusticolle, Westw. Arc. Ent. ii. p. 66 [3].

Hab. Costa Rica, Cache (*Rogers*); Panama, Bugaba, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).—Guiana, Cayenne [1 2 3]; Brazil, Pará [2].

This is a common species in Costa Rica and the State of Panama; it varies greatly in size.

RHINOPSIS.

Rhinopsis, Westwood, Arc. Ent. ii. p. 68 (1843–1845); Cresson, Trans. Am. Ent. Soc. 1887, Suppl. part 1, p. 113.

Rhinopsis was founded on a North-American species (*R. abbottii*), the only one (unless the European *Ampulex fasciata*, Jurine, is regarded as belonging to it) hitherto known. By Cresson the genus is formed into a distinct "family," separated from the Sphegidæ and other Fossores (except the Pemphredonidæ) by the wings having only "two complete cubital cellules"; but that definition would cut off *Rhinopsis* from *Ampulex*, to which it is clearly allied. A better point of distinction between *Ampulex* and the other Fossores consists in the first, instead of the second, cubital cellule receiving the first recurrent nervure. The rostrate clypeus, the large free mandibles, the elongated prothorax, and the large cubital metathorax, which usually ends in two teeth laterally, are also characteristic of *Ampulex*.

1. **Rhinopsis maculicornis.** (Tab. III. fig. 14, ♀.)

Niger, albo-villosus, scapo medioque antennarum, pedibus apiceque abdominis, rufis; alis hyalinis, fusco-maculatis. ♀.
Long. 8 millim.

Hab. Mexico, Jalapa (*F. D. G.*); Panama, Bugaba (*Champion*).

Antennæ as long as the head and thorax united, thickened towards the apex; the third joint longer than the fourth and fifth united. Head rugosely punctured, covered with a short white pubescence, and with a few hairs; clypeus finely punctured, and covered with long white hair, its apex projecting into a snout and reddish, as are also the tips of the mandibles; behind, the head is largely developed, rounded, and narrowed; the front and vertex are convex, rounded, and without any furrows; the ocelli are placed opposite the top of the eyes. Prothorax thickly pilose, as long as the mesothorax, twice longer than broad, narrowed anteriorly; above, towards the apex, furrowed, the sides in front rising on either side of the furrow into broad tubercles. Mesonotum hardly so pilose as the prothorax; marked with large, scattered punctures. Scutellum marked with a few scattered punctures. Metathorax longer than the mesothorax; bearing a central and four lateral keels (the central straight, that next to it curved, converging towards the apex, the second also slightly curved, the others straight); the space between the keels transversely striolated; in the centre the metanotum projects into a blunt tooth truncated at the apex, and laterally bears a sharp moderately long tooth. The petiole is a little longer than the hind coxæ. The apical abdominal segments are closely covered with a white pubescence. Wings as long as the thorax, largely suffused with fuscous in the middle; both the recurrent nervures are received before the middle of the cellules.

Fam. LARRIDÆ.

I adopt this term in the sense in which it is used by Kohl in his admirable paper, "Die Gattungen und Arten der Larriden" (Verh. zool.-bot. Ges. Wien, 1884, p. 171). As there understood, *Trypoxylon* is included in the family, this genus being by most authors either placed in the Crabronidæ or made into a distinct family—the "Trypoxylonidæ." If the strict analytical system now so much in vogue is to be followed, the latter doubtless is the most logical method; but I must confess that I question very much the utility, to say nothing of a natural arrangement, of forming "families" which can only be separated by one character, and that, moreover, of dubious taxonomical value.

In truth, the various groups of Sphegidæ, Larridæ, Bembicidæ, &c., can only be regarded as a complexus of genera equal in value to the Pompilidæ, Mutillidæ, and Formicidæ; and individually they cannot be considered as standing on the same level with the latter families, which are much more clearly defined from each other than are (say) the Larridæ from the Bembicidæ.

PISON.

Pison, Spinola, Ins. Lig. Spec. Nov. ii. fasc. iv. p. 256 (1808).
Tachybulus, Latreille, Gen. Crust. et Ins. iv. p. 75 (1809).
Nephridia, Brullé, Ann. Soc. Ent. Fr. ii. p. 408 (1833).
Pisonitus, Shuckard, Trans. Ent. Soc. Lond. ii. p. 79 (1837).
Pisonoides, Smith, Journ. Proc. Linn. Soc., Zool. ii. p. 104 (1858).
Parapison, Smith, Trans. Ent. Soc. Lond. 1869, p. 298.
Taranga, Kirby, Trans. Ent. Soc. 1883, p. 201.

A genus of wide-world range, and of which nearly sixty species are known. The two (one doubtful) species recorded from our region belong to *Pison* "sensu stricto."

1. **Pison conforme.**

Pison conformis, Smith, Trans. Ent. Soc. Lond. 1869, p. 297 [1].

Hab. Mexico [1].

[2. **Pison fasciatum.**

Pison fasciatum, Kohl, Verh. zool.-bot. Ges. Wien, 1883, p. 339 [1].

Hab. "America," Mexico aut Peru [1].]

TRYPOXYLON.

Trypoxylon, Latreille, Préc. Car. gén. Ins. p. 121 (1796); Fabricius, Syst. Piez. p. 180 (1804); Kohl, Verh. zool.-bot. Ges. Wien, 1884, p. 189.

Nearly eighty members of this genus have been described. *Trypoxylon* is represented in all the zoological regions, but by far the larger number of known species are from the Neotropical. They make their nests in twigs or in holes in wood, or form a mud-nest attached to twigs, and they store their nests with spiders.

Of our species, *T. albitarse* is the only one whose habits have been described. According to Mr. Peckolt (quoted by Mr. F. Smith, Trans. Ent. Soc. Lond. 1868, p. 133), it is called in Cantagallo, Brazil, "Marimbonda da Casa," or house-wasp, from its building its nest especially in rooms; but it also builds out of doors on the vines &c. "It makes a clay-nest in the form of a long cylinder; . . . . there are from four to six divisions, and in each cell is laid one egg; the cell is filled with some kind of spider, and hermetically sealed; and it is curious that precisely the required number of spiders is stored up, just sufficient to perfect the wasp, since none are ever found after the insect eats its way out of the earthen cell" (Smith, *loc. cit.*).

A. *Metanotum not trisulcate, or with a* **V***-shaped depression, impunctate, and not striated or furrowed at the base.* (Species 1–9.)

i. *Large, entirely black species, with black wings, more or less carinate clypeus, and whitish tarsi.*

1. **Trypoxylon albitarse.**

Trypoxylon albitarse, Fabr. Syst. Piez. p. 180; Dahlbom, Hymen. Eur. i. p. 286; Lepel. de St.-Fargeau, Hist. Nat. Ins. Hym. iii. p. 228, t. 27. f. 3; Saussure, Reise d. Novara, Hymen. p. 76.
Trypoxylon albitarse, var. *mexicana,* Saussure, loc. cit. p. 72. (Mandibles red.)
Trypoxylon politus, Say, Bost. Journ. Nat. Hist. i. p. 37 [1]; Complete Writings, ii. p. 756.

Hab. North America, Indiana [1].—Mexico, Presidio (*Forrer*); Guatemala, El Reposo, Zapote, San Gerónimo, Lanquin, Cubilguitz (*Champion*); Nicaragua, Chontales (*Belt*); Costa Rica, Cache (*Rogers*); Panama (*Boucard*).—South America, Brazil.

A common and widely-distributed species in the New World. The mandibles vary from black to red, and the pubescence from blackish to dull fulvous on the thorax.

2. **Trypoxylon cinereum.** (Tab. IV. figg. 1, 1 *a*; 1 *b*, ♂.)

Nigrum, cinereo-hirtum, facié et clypeo argenteo-pilosis; clypeo transverso, non carinato; metanoto transverse striato; tarsis posticis luteis; alis fuliginosis. ♂ ♀.
Long. 15–18 millim.

Hab. Mexico, Presidio (*Forrer*), Valladolid in Yucatan (*Gaumer*); Guatemala, Mirandilla 1700 feet (*Champion*).

In coloration similar to *T. albitarse*, but readily distinguished from it by the clypeus not being keeled (only projecting roundly at the apex), the body covered with long cinereous hair, and the front, face, and clypeus bearing a dense silvery pubescence. Eyes touching the base of the mandibles, the latter piceous towards the middle. Front and vertex opaque, coriaceous, covered with long hair, which varies in colour from fuscous to cinereous; a moderately deep suture on the front in the centre. Pro- and mesothorax covered with shallow punctures; metanotum closely transversely striated, except at the base, and (especially at the top) depressed in the centre. The pubescence on the mesonotum is dull cinereous; that on the pleuræ is longer and more silvery; on the metathorax it is still longer. There is a perpendicular patch of silvery pile below the tegulæ, on either side of the postscutellum, and on the sides of the pronotum behind. The abdomen is longer and more slender than in *T. albitarse*; the petiole is more slender, and becomes gradually thickened towards the apex, which is tumid above; and the apical segments bear a short sparse pile. The wings are not so deeply coloured as in *T. albitarse*, and are lighter towards the base and apex. The pleural suture is deep and wide. The hind tarsi are black at the base and apex. The legs are more slenderly built than in *T. albitarse*, and the hind tibiæ are not so dilated at the apex. There is no furrow on the front or vertex; the eyes at the top are separated by about the length of the third antennal joint.

ii. *Medium-sized species, with the wings almost hyaline but fuscous along the costa.*

a. *Abdomen black, reddish at the base of the second segment.*

3. **Trypoxylon mexicanum.**

Trypoxylon mexicanum, Saussure, Reise d. Novara, Hymen. p. 78, t. 4. figg. 45, 45 *b* [1].

Hab. MEXICO, Tampico [1], Jalapa [1].

4. **Trypoxylon aztecum.** (Tab. IV. fig. 2.)

Trypoxylon aztecum, Saussure, Reise d. Novara, Hymen. p. 80 [1].

Hab. NORTH AMERICA, San Lucas in Lower California [1].—MEXICO, Presidio (*Forrer*), Pueblo viejo near Tampico [1], Teapa in Tabasco (*H. H. Smith*), N. Yucatan (*Gaumer*).

5. **Trypoxylon lactitarse.**

Trypoxylon lactitarse, Saussure, Reise d. Novara, Hymen. p. 81 [1].

Hab. MEXICO, temperate region and eastern cordilleras [1].

6. **Trypoxylon luteitarse.**

Trypoxylon luteitarse, Saussure, Reise d. Novara, Hymen. p. 82, t. 4. figg. 47, 47 *b* [1].

Hab. MEXICO, eastern cordilleras [1].

7. **Trypoxylon carinifrons.**

Nigrum, argenteo-hirtum, basi antennarum, tibiis, tarsis anticis basi abdominisque segmento 2° sordide rufis; alis fere hyalinis, cellula marginali fumata.

Long. 11 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*, May 1888).

The five basal joints of the antennæ broadly obscure rufous beneath; the third joint fully one quarter longer than the fourth; the apical joint rufous. Head opaque, coarsely alutaceous; eyes at the top separated by nearly the length of the second and third antennal joints united. An obscure furrow runs down from the ocelli; and opposite the top of the eye-incision in the middle is a stout transverse keel crossing the longitudinal furrow. Clypeus broadly carinate. The face, eye-incision, cheeks, and clypeus densely covered with silvery pile. Thorax shining, minutely but obscurely punctured; the metanotum obscurely transversely striated; the pronotum, the sides of the mesonotum, and the greater part of the metanotum densely covered with silvery hair. Metanotum with a gradual rounded slope; a distinct continuous furrow in the centre of the apical half. Abdomen petiolated; nearly twice the length of the thorax; the first and second segments shining, obscure pale rufous beneath, but faintly pilose; the petiole twice the length of the second segment, dilated at the base, the latter almost longer than the third; from the third the segments bear a close cinereous pile, observed as oblique bands. The wings have the apex from the stigma to the end

smoky, the band not extending beyond the middle of the cubital cellules. Tegulæ fuscous. The anterior legs are all more or less rufous beneath; the four hind femora beneath and the calcaria and claws are also rufous.

Characteristic of this species is the short transverse keel in the centre of the front.

8. **Trypoxylon fulvispina.**

Nigrum, cinereo-pilosum, fronte et vertice rugosis; geniculis, basi abdominis segmento 2° spinisque, fulvis; alis hyalinis, cellula marginali fumata.
Long. 10 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*, Feb. 1888).

Antennæ subclavate, covered with a dense pale pile; the third joint about one quarter longer than the fourth. Front and vertex uniformly, coarsely, and rugosely punctured; sparsely covered with a fuscous pubescence; a shallow, but distinct, furrow runs down from the ocelli; the latter piceous in colour and separated from the eyes by hardly the length of the second antennal joint. Eyes at the top separated by the length of the third antennal joint. The front projects in the centre a little above the antennæ. Cheeks, face, and clypeus densely covered with silvery pubescence. Mandibles reddish, the tips blackish. There is a narrow shallow furrow on the occiput at the top. Clypeus slightly but broadly projecting, not carinate. Thorax shining; covered with shallow, distinctly separated punctures, and clothed with fuscous pubescence; the edges of the pronotum, the oblique furrow on the mesopleura, and the apex and the sides of the metanotum covered densely with silvery pubescence; the sternum also bearing silvery pubescence. Metanotum finely transversely striated (indistinctly so at the base), and with a wide hollow in the centre of the apical half, the hollow having a fine furrow at its bottom. The two basal segments of the abdomen shining and almost glabrous; the others bearing a scattered short silvery pile, especially along the sides. Tibiæ and tarsi densely covered with a short silvery pile; the spurs fulvous, the claws rufous.

This species comes near to *T. carinifrons*, but may be known from it by the coarsely rugose head, which wants the transverse keel on the front, the clypeus not carinate, the punctuation on the thorax covering a wider space, the wings much darker, and with the stigma dark fuscous, and the entirely black antennæ.

b. *Abdomen and legs for the greater part fulvous.*

9. **Trypoxylon fulvipes.** (Tab. IV. fig. 3.)

Nigrum, aureo-hirtum, antennis, abdomine pedibusque fulvis; alis hyalinis, stigmate testaceo, nervis fuscis. ♀.
Long. 12 millim.

Hab. PANAMA, Bugaba (*Champion*).

Antennæ as long as the head and thorax united; blackish, broadly so beyond the

middle, covered with a white pile; the third joint fully one half longer than the fourth, the last longer than the penultimate. Head covered with golden pubescence, very densely on the face, clypeus, and eye-incision, sparsely on the vertex; the latter alutaceous, projecting broadly, widely furrowed behind the ocelli, and with a transverse keel in the middle, it being also keeled in the centre, and almost perpendicular below the transverse keel. Eyes at the top separated by fully the length of the third antennal joint. Clypeus broadly keeled down the middle, the apex projecting. Mandibles densely pilose, blackish at the tips. Thorax densely covered all over (except on the centre of the mesonotum, scutellum, and metanotum) with golden pubescence. Pronotum keeled in the middle; mesonotum minutely punctured; the metanotum transversely striated, and with a wide furrow in the apical half. Abdomen about one fourth longer than the head and thorax united; the basal three segments blackish at the apex above, and almost bare, the other segments (especially the apical) covered with golden pubescence. The legs bear a pale pubescence; the hind femora are infuscated above.

B. *Metanotum broadly and deeply furrowed throughout; abdomen and legs for the greater part fulvous.* (Species 10.)

10. **Trypoxylon balteatum.** (Tab. IV. figg. 4, 4 *a*.)

Nigrum, aureo-hirtum, basi antennarum late, clypeo, tegulis, abdominis segmentis 1°–3ᵐ pedibusque fulvis; alis flavo-hyalinis, nervis testaceis. ♀.

Long. 13 millim.

Hab. Mexico, Atoyac in Vera Cruz (*H. H. Smith*, May 1888).

Antennæ bearing a white microscopic down; joints 1–4 and part of 5 fulvous; the third joint nearly twice the length of the fourth. Front and vertex alutaceous and bearing scattered punctures; the occiput, clypeus, the incision of the eyes, and the inner orbits thickly covered with golden hair. Ocelli hardly forming a triangle; the anterior ocellus placed in a hollow and separated from the posterior ones by the curved posterior margin of this hollow, from which runs a broad and deep furrow down the front. Eyes above separated by about the length of the second and third antennal joints united; below by less than the length of the third. Clypeus slightly concave; the apex broadly rounded and projecting, the margin clearly separated. Thorax shining, impunctate; the pronotum, a stripe along either side of the mesonotum, one on either side of the postscutellum and down the side of the metanotum thickly covered with golden hair; the pleuræ uniformly covered with fulvous hair, which does not form stripes or patches. Metathorax elongated, narrowed distinctly and gradually towards the apex; a broad and deep furrow in the centre above, divided into two where the slope begins; in the lower (and longer) part of the furrow are some transverse keels. Abdomen shining, impunctate, the apical segments covered with a pale fulvous down. The petiole has a black stripe above, and is more or less black at the apex

laterally; the second segment has a broad black stripe on the apical half, and the third is narrowly black at the apex. The coxæ are black at the base; the hind femora are broadly lined with black above; and the hind tibiæ are obscurely lined with black behind.

C. *Metanotum usually striated and with a* **V**-*shaped excavation on the apical half.*

(Species 11–14.)

11. **Trypoxylon apicipenne.** (Tab. IV. fig. 5.)

Nigrum, aureo-hirtum, tegulis, tibiis anticis, medio tarsorum spinisque rufis; metanoto excavato, transverse striolato; alis fusco-hyalinis, apice fumatis.

Long. 18 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

Antennæ microscopically pilose and with joints 2–4 rufous beneath; the third joint one third longer than the fourth. Eyes at the top separated by less than the length of the third antennal joint; at the bottom by fully the length of the second and third joints united. Head to the ocelli closely punctured; behind them shining and impunctate. Vertex raised behind the ocelli and with a shallow indistinct furrow in the centre. Ocelli almost in a triangle; a furrow runs down from them. Clypeus broadly keeled in the centre, the apex projecting, incised in the middle and with a slighter incision on either side of the central one. The clypeus, cheeks, and eye-incision densely covered with silvery pubescence. Thorax shining, finely punctured; the centre of the metanotum transversely striolated. The usual stripes on the thorax densely covered with silvery (slightly inclined to golden) hair. The centre of the metanotum with a broa **V**-shaped depression. Abdomen comparatively short, not being very much longer than the head and thorax united; the first segment one third longer than the second, and raised considerably above it at the apex; the segments above on the sides bear a close fulvous pile, and the apical ventral segments longish fuscous hair.

12. **Trypoxylon cinereo-hirtum.** (Tab. IV. figg. 6, 6 *a*.)

Nigrum, cinereo-hirtum; clypeo carinato, aureo-piloso; fronte coriaceo-punctata; metanoto transverse striato; basi abdominis segmento 1° medioque tarsorum posticorum luteis; alis fusco-hyalinis, apice fumatis. ♀.

Long. 13 millim.

Hab. MEXICO, Vera Cruz, Teapa in Tabasco (*H. H. Smith*), Temax in North Yucatan (*Gaumer*); GUATEMALA, Paraiso 300 feet, Guatemala city (*Champion*).

Front, face, and clypeus covered densely with golden pile; the front and vertex strongly coriaceously punctured and covered with fuscous hairs; clypeus truncated at the apex, finely and closely punctured; a shallow indistinct furrow on the front. Thorax shining, punctured; the metanotum strongly transversely striated, the base aciculately punctured. The pubescence on the thorax is longish and cinereous; there

is a perpendicular silvery stripe down from the tegulæ, a patch on either side of the postscutellum, and another on the sides of the middle segment. Middle segment with a deep **V**-shaped depression in the centre, extending to the apex. Pleural suture wide, deep, and oblique. Abdomen shining, covered with silvery and golden pile, which is especially thick on the sides and bases of the segments. Petiole dilated towards the apex, the extreme apex, however, being narrowed; first segment becoming gradually (but slightly) thickened towards the apex and petioliform, the other segments much thicker than it and together forming an elongated ovoid.

13. **Trypoxylon fusciventre.**

Nigrum, fulvo-hirsutum, tibiis, medio tarsorum abdomineque testaceis aut fuscis; alis hyalinis, nervis rufo-testaceis. ♀.

Long. 13 millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Antennæ rufous beneath towards the apex, microscopically pilose; the third joint about one quarter longer than the fourth. Head coarsely rugose, except behind the ocelli, where it is only aciculate. Eyes at the top separated by the length of the second and third antennal joints united, at the bottom by scarcely the length of the third. Ocelli in a triangle; the vertex slightly depressed in the middle behind them; front convex, without a furrow. Clypeus projecting at the apex and with a narrow incision in the middle. Mandibles piceous. Above the antennæ and on the clypeus are some scattered longish silvery-white hairs. Thorax shining, above with shallow punctures; the metanotum transversely striated. There is a band of pale hair on the pronotum, one across the postscutellum, and another on the sides of the metanotum, and the pleuræ bear scattered hair. There is a shallow **V**-shaped depression on the centre of the metanotum. Abdomen clavate from the third segment; the petiole clavate at the apex and a little longer than the second segment. The legs are for the greater part piceous; the three middle joints of the hind tarsi are obscure yellow, and the four front tarsi obscure testaceous; the spurs are dark fuscous.

I am not sure but the piceous colour of the abdomen and legs may be owing to immaturity, as in one specimen these parts are much darker.

14. **Trypoxylon sonorense.** (Tab. IV. fig. 7.)

Nigrum, argenteo-fulvum, punctatum; apice petioli, abdominis segmento 1° basique 2° rufis; alis fere hyalinis, apice fumatis; tegulis testaceis.

Long. 13–16 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

Face, front, orbits, and clypeus densely covered with silvery pile; clypeus slightly convex, not carinate, the apex with a slight incision in the centre. Front and vertex strongly coriaceous, the former with an indistinct furrow in the centre, scarcely

depressed. Thorax shining, punctured, but not strongly; the edges of the sutures and the sides of the middle segment densely fringed with silvery pubescence; the other parts with a short pale cinereous pubescence. There is a short broad suture on either side of the mesonotum at the tegulæ; the pleural suture is oblique and broad; the middle segment has a wide and deep **V**-shaped depression in the centre. Abdomen shining, covered with a short cinereous pile, especially at the apices of the segments; petiole thickened and tumid towards the apex, on the top at the apex considerably higher than the first segment; first segment petioliform, becoming gradually thickened towards the apex; the second segment depressed at the base. Coxæ, trochanters, tibiæ, and tarsi densely covered with a short pubescence.

The male has the pubescence on the front of the head golden, the mandibles reddish, and the hind tarsi testaceous in the middle.

The petiole in some specimens is for the greater part red, in others the base only is black above.

D. *Metanotum furrowed in the middle; hind trochanters with a stout spine.*

(Species 15.)

15. **Trypoxylon spinosum.** (Tab. IV. figg. 8, 8 *a*; 8 *b*, ♂.)

Nigrum, petiolo abdominisque segmento primo rufo-maculatis, medio tarsorum posticorum luteis; facie, clypeo lineaque mesonoti aureo-hirtis; thorace cinereo et argenteo-piloso; vertice rugoso; metanoto excavato, transverse striato; trochanteribus posticis spina longa armatis; alis fusco-maculatis. ♂ ♀.
Long. 12–14 millim.

Hab. Mexico, Presidio (*Forrer*).

Head nearly as wide as the thorax; front and vertex convex, not depressed, rugosely punctured; a shallow furrow uniting the ocelli; eyes at the top separated by a little more than the length of the third antennal joint, margined above the incision, the latter rounded at the end. Clypeus shining, punctured, rather flat, not keeled; a small rounded incision in the centre, the incision itself having a small thick tubercle in its middle. Mandibles reddish at the base; finely rugosely punctured. The golden pubescence is thick and moderately long, and extends from the eye-incision to the apex of the clypeus. There is a moderately sparse fuscous pubescence on the vertex, and behind the eyes there is a longer and thicker silvery pubescence. Antennæ thick, black, covered with a cinereous microscopic pile. Prothorax above of equal width, but in the middle with a slope from the base to the apex above, and without any projecting angles laterally. Mesonotum shining, closely and somewhat strongly punctured, the pleuræ, if anything, more strongly and closely so; the oblique furrow shallow. Metanotum closely transversely striated; a broad **V**-shaped depression in the centre. The pronotum in front, a line along the base of the mesonotum, and the metanotum (especially at the base and apex) broadly clothed with silvery, inclining to golden, hair; the rest of the thorax with short fuscous hair. Abdomen alutaceous, from the second

segment covered with short fulvous pubescence; the petiole and second segment almost glabrous above, the sides with short cinereous pile. Petiole tuberculate laterally near the base; above with a narrow, shallow furrow, which barely reaches to the middle. The second segment is raised at the base, of nearly equal width throughout (but, if anything, thicker towards the apex), and very little longer than the third segment. The apical segment is broadly keeled in the middle above. Legs densely pruinose; the anterior and intermediate spurs, and the middle of the intermediate and posterior tarsi broadly luteous. The hind coxæ are large, obliquely keeled and hollow above, and end laterally in a short blunt tooth; the spine on the trochanter is rather long, being fully half the length of the basal joint of the trochanter.

E. *Metanotum with a curved furrow on either side of the basal half, and usually with one down the centre as well.* (Species 16–20.)

16. **Trypoxylon cornigerum.**

Nigrum, opacum, punctatum, mandibulis, tibiis tarsisque anticis rufis; metanoto striolato, bicanaliculato; alis hyalinis.
Long. 11–12 millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Antennæ covered with pale down, the basal three fourths rufous beneath; the third joint about one fourth longer than the succeeding one. Clypeus thickly, the inner orbits and the eye-incision sparsely, clothed with silvery pubescence; the rest of the head sparsely pilose. Front and vertex opaque, coarsely aciculate. Eyes at the top separated by a little less than the length of the second and third antennal joints united, below by about the length of the third. Ocelli in a triangle, the posterior two in a depression. Front convex, with an indistinct furrow in the centre. Above the antennæ is a broad projection, with a rounded apex. Clypeus sharply projecting at the apex, the apex rounded, smooth, and shining. Mandibles testaceous. Thorax opaque, alutaceous; the sternum sparsely, the sides of the metanotum thickly, covered with silvery-white hair. Metanotum obliquely striolated; the apex semioblique; a **V**-shaped furrow in the middle, the portion of the furrow on the apical oblique part being wider than the fork; there is also a shallow indistinct furrow down the centre of the basal part. Abdomen sparsely pilose; the first segment about one fourth longer than the second.

17. **Trypoxylon chichimecum.**

Trypoxylon chichimecum, Saussure, Reise d. Novara, Hymen. p. 83, t. 4. figg. 48, 48 *b*, *c*[1].

Hab. Mexico[1].

This species is stated to occur in elevated districts, in the valley of the city of Mexico[1].

18. **Trypoxylon toltecum.**

Trypoxylon toltecum, Saussure, Reise d. Novara, Hymen. p. 83 [1].

Hab. Mexico, Orizaba [1], eastern cordillera [1].

19. **Trypoxylon palliditarse.** (Tab. IV. figg. 9, 9 *a*, *b*.) (Nec. Sauss.) = tabascense Strand 1910 = cameroni D.T. 1897

Nigrum, nitidum, palpis, geniculis tarsisque anterioribus albis; alis fere hyalinis, nervis nigris.
Long. 11 millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*, March 1888).

Antennæ as long as the thorax, thickened towards the apex, the scape obscure testaceous beneath; the basal joints of the flagellum fuscous; the third joint, if anything, shorter than the fourth; the fifth joint curved beneath; the last joint hollowed and narrowed laterally and as long as the preceding three joints united. Head shining; the front rugosely punctured, raised broadly in the middle, narrowed to a broad keel immediately before the antennæ, and with a broad furrow in the centre. Vertex depressed behind the front ocellus, the latter placed in a hollow. Clypeus projecting at the apex. The eye-incision, face, cheeks, and clypeus densely covered with silvery hair. Eyes at the top separated by more than the length of the first and second antennal joints united. Mandibles reddish at the apical half. Thorax shining, sparsely punctured above; the pleuræ and sternum covered with rather long white hair, finely, but distinctly punctured. The pronotum transversely furrowed in the middle above, and there are two shallow furrows on the mesonotum. Metanotum with a wide and deep central furrow and a curved narrower one on either side, these leading into a wide and deep furrow in the apical part. The metapleuræ are glabrous and slightly concave. The abdomen is about one half longer than the head and thorax united; shining, pilose beyond the second segment, densely so at the apex, the latter fuscous above and beneath. The spurs are all white; the hind tarsi have the base of the first and the greater part of the second and third joints blackish.

The curved fifth antennal joint and the elongated and hollowed last joint are characteristic of this species.

20. **Trypoxylon rugifrons.**

Nigrum, subopacum, argenteo-pilosum, vertice et fronte rugosis; thorace punctato, metanoto striato; spinis et basi tarsorum anterioribus albis; mandibulis rufis; tegulis albo-testaceis; alis hyalinis. ♂.
Long. 8 millim.

Hab. Mexico, Vera Cruz (*H. H. Smith*, Jan. 1888).

Antennæ short, subclavate, densely covered with a microscopic down; the third joint a little longer than the fourth; the joints not clearly separated. Head opaque; above the antennæ finely rugosely punctured; the front broadly projecting; the ocelli in pits, a broad and shallow furrow leading down to them; the front immediately above the antennæ in the centre projecting into a wedge; eyes above separated by the length

of the third and fourth antennal joints united. Eye-incision widening out broadly, so that its mouth is more than twice the width of the base. Clypeus, face, the head behind the eyes, and eye-incisions densely covered with silvery pubescence. Clypeus slightly projecting, the apex rounded. Pro- and mesothorax sparsely and finely punctured; the mesopleuræ shining, impunctate. Metanotum obscurely obliquely striated, the centre raised into a U-form, but with a hollow in the middle; the middle segment with a sharply oblique slope and furrowed in the centre. The pronotum rises gradually to a point in the centre. The entire thorax is pubescent; the mesonotum in front, the mesopleuræ at the base and apex, and the metapleuræ and sides of the metanotum are thickly covered with silvery hair. Abdomen nearly twice the length of the head and thorax united; the segments not tumid at the apex; the second segment about one fourth longer than the third, pruinose; the apical segments covered with a moderately long pubescence. Legs thickly pruinose; the coxæ covered with white hair.

LARRA.

Larra, Fabricius, Ent. Syst. ii. p. 220 (1793); Kohl, Verh. zool.-bot. Ges. Wien, 1884, p. 65.
Larrada, Smith, Cat. Hymen. Ins. iv. p. 273 (1856); Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 385 (partim).

I use here the term *Larra* as defined by Kohl (loc. cit.). *Larra* and *Notogonia* are united by Smith, Patton, and others in *Larrada*; but I agree with Kohl in regarding them as distinct. *Larra*, in fact, may be known from *Notogonia* by the form of the prothorax, the mandibles without an inner tooth, the smooth pygidium (not thickly pilose and ending in bristles), the smooth, shining abdomen, the fore tibiæ spined on the outer side, and the absence of a process in the third ventral segment; and, further, by the eyes not converging so much at the top, and the shorter clypeus and legs.

Larra has a wide distribution over the globe.

1. **Larra godmani.** (Tab. IV. fig. 10, ♀.)

Nigra, nitida, capite thoraceque punctatis; metathorace opaco, rugoso; abdomine rufo; alis fuliginosis. ♀. Long. 16–17 millim.

Hab. Mexico, Orizaba (*H. H. Smith & F. D. Godman*, Dec. 1887).

Antennæ with the scape bare, shining; flagellum opaque, covered with a white microscopic down; the second joint one half the length of the third, the latter about one quarter longer than the fourth. Head shining, microscopically pilose, the cheeks covered with short, white pubescence; punctured distinctly, the punctures clearly separated. Eyes margined at the top, separated by rather more than the length of the third antennal joint. Above the ocelli is a wide semicircular depression; and there is a wider one, narrowed in the centre, towards the lower ocellus, the latter being rather indistinct and placed in the middle of the depression; from this depression a narrow,

but deep, furrow runs from the ocellus to the base of the antennæ. The centre of the head is broadly hollowed; and there is a curved and moderately wide furrow on the inner side of the lateral protuberance. Clypeus broadly rounded, almost transverse in the centre, shining; the apex flat, not projecting, and almost impunctate. Labrum broadly projecting and truncated in the middle. Mandibles red, black at the base; the upper side margined and furrowed close to the lower edge; on the lower side is a wider furrow, and placed at a greater distance from the edge than the upper one; closely punctured at the base, and with only a few scattered hairs. Thorax covered with a short, thick, dark pile, closely and rather strongly punctured; the metathorax rugosely punctured, the apex with a sharp oblique slope, and irregularly transversely striolated, and rather thickly covered with moderately long, dark fulvous pubescence. Abdomen narrow, acute at the apex, longer than the thorax, shining; fulvous, except for a few rather long hairs on the ventral surface at the apex; the pygidial area furrowed along the sides, the furrow not extending to the base, the apical ventral segment also furrowed laterally and punctured. Legs densely pruinose; the coxæ punctured and densely covered with white hair.

2. **Larra rufitarsis.** (Tab. IV. fig. 11, ♂.)

Nigra, abdomine tarsisque rufis; alis fusco-hyalinis. ♂.
Long. 11 millim.

Hab. Mexico, Presidio (*Forrer*).

Antennæ microscopically pilose; the third joint about one quarter shorter than the fourth. Head strongly punctured; the face and clypeus bearing long whitish hair; eyes at the top separated by the length of the fourth antennal joint. Vertex behind the ocelli depressed, and with a narrow furrow in the centre; ocellar area raised, also furrowed in the middle, and there is a wider, but less distinct, furrow in the centre of the front. Clypeus broadly projecting, depressed, and rounded at the apex. Mandibles reddish in the middle. Mesothorax shining, strongly punctured. Metathorax opaque, narrowed towards the apex, coriaceous. Abdomen shining, black at the base in the middle; the segments laterally bearing a white silky pile. Legs pruinose; the spurs reddish. Second cubital cellule hardly one fourth longer than the third, and nearly one half longer than the space bounded by the recurrent nervures, that being less than the length of the third cubital cellule at the top.

3. **Larra sonorensis.**

Nigra, punctata; pleuris opacis, rugosis; abdomine rufo; alis fere hyalinis. ♀.
Long. $10\frac{1}{2}$ millim.

Hab. Mexico, Northern Sonora (*Morrison*).

Very nearly related to *L. rufitarsis*, but differing in having the tarsi and spurs black; the pleuræ opaque, coriaceous; the clypeus more projecting and more abruptly sloped

towards the apex; and the wings more clearly hyaline, with the second cubital cellule longer compared with the third. The third antennal joint is less than one quarter shorter than the fourth. The tips of the tarsi are rufous.

NOTOGONIA.

Notogonia, Costa, Ann. Mus. zool. Univ. Napoli, iv. pp. 80, 82 (1868).
Larrada, Smith, Cat. Hymen. Ins. iv. p. 273 (partim).
Larra, Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 385.

This genus appears to be much more numerous in species than *Larra* and has an equally wide distribution. The species are very difficult of discrimination, and I have been compelled to leave over for future study many specimens which no doubt represent different species from those here enumerated.

1. **Notogonia violaceipennis.** (Tab. IV. fig. 12, ♀.)

Nigra, opaca; oculis longitudine antennarum articuli tertii distantibus; abdomine quam thorax breviore; alis violaceis.
Long. 18 millim.

Hab. PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Eyes separated at the top by scarcely the length of the third antennal joint. Antennæ as long as the thorax, covered with fuscous pile; scape with pedicle as long as the second and third joints united, finely transversely striated; second joint considerably narrowed in the basal half, curved, more than one third of the length of the third joint; the latter dilated at the apex, and a very little longer than the fourth, which again is a little shorter than the fifth. Head above the antennæ finely shagreened; face and clypeus closely punctured. Clypeus broadly projecting in the centre; the apex depressed, almost impunctate, and with a row of foveæ above the depressed part; the centre with a very slight incision. Mandibles strongly punctured at the base, aciculated at the apex. Palpi black, whitish at the apices of the joints, and covered with whitish hair. Face and clypeus covered with fulvous pile of moderate length and thickness. Thorax opaque, finely coriaceous, the scutellum very slightly, the pro- and metathorax more strongly than the mesothorax. Anterior part of the pronotum broadly raised, and with two elongated foveæ on the top; in length fully three fourths as long as the posterior part (counting to the elongated apex). A depression separates the anterior and posterior portions of the pronotum, the whole being not much shorter than the head; the anterior part bears a longish dark fulvous pile, and the posterior part is silvery-sericeous; and the propleura at its point of junction bears a fringe of fulvous hairs. Meso- and metathorax opaque, scarcely pilose, except on the sternum and on the apex of the metanotum. Mesonotum but slightly convex in front, and not depressed in the middle; metanotum with a furrow down its entire length (except at the top of the apex), the apex oblique (but not sharply), and having

the furrow deeper than on the basal part, as well as a few coarse striations on the edges. The depression on the mesopleuræ below the wings is wide and deep. Abdomen shining; above with a sparse silvery pubescence at the apices of the segments; beneath with a few, rather long, black hairs. Pygidium coarsely and strongly punctured, and bearing a silvery pile and stout fulvous bristles; the apex rounded, beneath shining, covered with large scattered punctures, the base impunctate and almost transverse. Penultimate segment on the lower side sparsely punctured. Legs covered with a dull sericeous pile, pale at the base, fulvous to blackish or fuscous at the apex of the tibiæ and at the base of the tarsi. Wings deeply violaceous, of a slightly lighter tint at the apex. Recurrent nervures united; second cubital cellule at the top about three fourths of the length of the third cellule at the top, and less than the distance bounded by the first recurrent and first transverse cubital nervures, the latter sharply angled above the middle, the upper portion being straight.

2. **Notogonia montezuma.**

Nigra, opaca; oculis longitudine antennarum articuli secundi distantibus; alis fusco-violaceis.
Long. 17 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

Antennæ stout, scarcely the length of the thorax, covered with a close whitish pile; first joint (with pedicle) nearly as long as the second and third joints united, not much dilated on the lower side; second joint nearly half the length of the third, not much dilated at the apex; third joint, if anything, longer than the fourth. Eyes at the top separated by less than the length of the third antennal joint. Head opaque; front, face, and clypeus covered with a moderately long pile, the pile silvery on the front and inclining to fulvous or brownish on the clypeus, it being especially long at the sides of the latter. Clypeus broadly rounded, closely and rather strongly punctured; a broad, not clearly separated, keel down the centre; its apex with a narrow incision. Mandibles strongly striated at the base, aciculated at the middle, and bearing a few longish hairs on the lower side, the median teeth sharply pointed. Thorax bearing a short fuscous pile; finely and very closely punctured, the pleuræ and metathorax more strongly than the mesothorax. Prothorax covered with a silvery pile; the fore part depressed, not raised at the apex, and sunk well into the head, and situated at a much lower level than the posterior portion. Mesonotum shining above; the pleuræ and metathorax opaque, much more strongly coriaceous. Furrow on the mesopleuræ narrow, reaching beyond the middle. Metanotum with a shallow depression in the centre; middle segment deeply channelled, except at the top, where a triangular raised part runs into the channel, and, as well as the metanotum, bearing a close whitish pile. Abdomen sericeous, especially at the apices of the segments. Pygidium closely rugose, covered with a dull pile and with fulvous bristles; the apex truncated; beneath, as also the penultimate segment, sparsely punctured, the other ventral segments trans-

versely aciculated. Legs densely pruinose; the brush on the metatarsus and claws reddish-fulvous. Recurrent nervures very nearly united; the second cubital cellule at the top scarcely half the length of the third at the top, and less than the distance bounded by the first transverse cubital and recurrent nervures, the former curved at the top half.

Apart from the difference in the form of the prothorax, this is a smaller species than *N. violaceipennis*. It has the mandibles striolated (not rugose) at the base, and their median teeth sharply pointed (not rounded). The pile on the face is paler; the foveæ on the clypeus are absent, or, at any rate, are very indistinct and confused; the furrow on the mesopleuræ is longer and narrower; the abdomen is more densely sericeous throughout; the pygidium is rounded at the apex; the ventral surface is very distinctly aciculated (which is not the case in *N. violaceipennis*); and the wings are not violaceous, and have the first transverse cubital nervure curved at the top.

✓ 3. **Notogonia championi.**

Nigra; abdomine quam thorax longiore; alis violaceis, apice fuscis.
Long. 17 millim.

Hab. GUATEMALA, Paraiso 300 feet (*Champion*).

Antennæ longer than the head and thorax united, covered densely with a silky pile, especially towards the base; the first joint a little longer than the second and third joints united, narrowed at the base, which does not project close to the pedicle, the lower side not carinate; second joint scarcely contracted at the base, about one fourth the length of the third, the latter becoming gradually (but slightly) thickened towards the apex, and distinctly thinner and longer than the fourth. Head opaque; the vertex bearing a fuscous, the cheeks, front, and face a silvery, and the clypeus a longer and thicker fulvous, pubescence. Clypeus punctured, rounded, the apex with a narrow incision; the centre at the base keeled. Mandibles with the apical half piceous, the base finely rugose. The depression on the vertex is broader than long, the bottom forming a raised triangle; the furrow leading from the ocellus is narrow; the central depression on the front is deep, and is clearly separated from the furrow leading down to the antennæ. The eyes at the top are separated by the length of the third antennal joint. Thorax semiopaque, aciculate; the mesonotum neither depressed at the centre nor at the sides; scutellum shining, impunctate; postscutellum aciculate; metanotum opaque, alutaceous, the centre slightly depressed, and with a keel down the basal half, the middle segment semioblique, furrowed down the centre. The furrow on the mesopleuræ extends a little beyond the middle. The prothorax in front, the edges of the tubercles, and the sides of the metanotum and the middle segment bear a short silvery pile; the sternum has a fulvous pubescence. Abdomen elongated, nearly as long as the head and thorax united, narrow, the apex acute, the segments at their point of junction silvery; the pygidium punctured, the apex rounded, the pubescence and

bristles dull fulvous, the apical two segments punctured. Legs densely pruinose; the metatarsal brush dull fulvous. The second cubital cellule at the top is about two thirds of the length of the third, and less than the distance bounded by the first transverse cubital and first recurrent nervures; the recurrent nervures are separated.

Differs from *N. violaceipennis* by the body being narrower, especially the abdomen, the latter also more sericeous, and having the pygidium longer, narrower, and rounded at the apex; the scutellum impunctate, and not furrowed in the centre; the mesonotum not depressed; the antennæ somewhat shorter; the clypeus densely covered with a fulvous pubescence and incised at the apex; and, more particularly, by the elongate second joint of the antennæ, this joint being nearly half the length of the third.

4. **Notogonia truncata.** = truncatula D. T. 10. 675

Nigra, opaca; oculis in vertice fere dupla longitudine antennarum articuli secundi inter se distantibus; alis fusco-violaceis.

Long. 14 millim.

Hab. Costa Rica, Cache (*Rogers*).

Antennæ about the length of the head and thorax united, the flagellum almost glabrous, the scape sparsely pilose; the first joint, if anything, shorter than the second and third joints united, the lower side bluntly keeled, the base narrowed, the extreme base scarcely projecting; the second joint about one third of the length of the third, and incised at the base on the lower side; the third and fourth joints subequal. Head opaque, the vertex sparsely covered with fuscous pubescence, the cheeks and front with a silvery pile, the clypeus with moderately long fulvous pubescence. The depression on the vertex is longer than broad, deep; the furrow below the ocellus wide, twice as long as broad; frontal depression large, deep; the furrow above the antennæ wide, shallow. Clypeus with the extreme apex shining, impunctate, the middle with a small, but distinct, semicircular notch, above this impunctate; edge opaque, coarsely punctured, and bearing on the lower side some elongated foveæ; the centre is broadly and indistinctly keeled. Mandibles striated at the base. Thorax opaque, alutaceous, the metanotum finely coriaceous; mesonotum truncated in front, not depressed in the centre nor at the sides. Scutellum shining, obsoletely punctured; the furrow on the mesopleuræ scarcely extending to the middle; metanotum with a shallow, not very distinct, furrow in the middle, the apex oblique, and with a narrow, but deep, furrow in the centre, the furrow commencing a little above the middle. The pubescence is fuscous and close; on the apex of the metanotum it inclines to fulvous. Abdomen scarcely twice the length of the metathorax; the segments with a silky pile at their point of junction; the pile on the apical segments fulvous; pygidium short, broad, truncated at the apex, the sides projecting, the top bearing long fuscous bristles, as well as a stiff pubescence; the apical two segments with scattered punctures. Legs

pruinose, golden-fulvous at the apex of the hind tibiæ and at the base of the tarsi; hind tibiæ broadly dilated at the base.

The male, or what I suppose to be such, has the second antennal joint half the length of the third, and curved on the lower side; the eyes separated at the top by more than the length of the third antennal joint; and the front tooth on the middle of the mandibles reduced to a mere stump.

5. **Notogonia argentifrons.**

Nigra, dense argenteo-pilosa; oculis fere dupla longitudine antennarum articuli secundi distantibus; alis hyalinis, apice fusco.
Long. 16 millim.

Hab. GUATEMALA, Pantaleon 1700 feet (*Champion*).

Antennæ of moderate stoutness, microscopically pilose; first joint sharply keeled on the lower side, narrowed towards the base and apex, and as long as the second and third joints united; second joint narrowed at the base, about one fourth of the length of the third, the latter a little longer than the fourth. Head finely and closely, the clypeus much more strongly, punctured; apex of the latter projecting, shining, impunctate, and with a slight notch in the centre, the middle with a flat, broad, indistinctly defined keel. Mandibles at the base longitudinally punctured, and densely covered with a piceous-silvery pile; the other part shining, impunctate, and glabrous. The front, face, cheeks, and clypeus densely covered with silvery pubescence, as are also the lower part of the occiput and the under part of the head. Thorax opaque, very finely punctured; the sides of the apex of the metanotum with a few stout striæ. Prothorax almost entirely covered by the head above; the pronotum saddle-shaped. Mesonotum with a shallow, broad furrow in the middle in front. Metanotum with a furrow down its centre, the furrow becoming slightly broader towards the apex; metapleuræ oblique and broadly depressed in the centre, and finely obliquely striated; middle segment with a deep furrow down its centre, and having a sharply oblique slope. Abdomen with some bluish tints; the segments at their apices with a silvery pubescence; the penultimate segment with a golden-fulvous pile. Pygidium apparently longitudinally punctured, densely covered with golden-fulvous or copper-silvery bristle-like hair; the apex truncated, but with a tooth-like projection at either side; the bristles pale, broad. The ventral surface of the last segment has a distinct curve, and is punctured, as is also the penultimate segment; the other ventral segments are aciculated, fulvous at the apex. Legs pruinose; the brush on the spur and metatarsus deep reddish-fulvous. Recurrent nervures almost united; second cubital cellule at the top one fourth of the length of the third at the top, and about one half the length of the space bounded by the first transverse cubital and recurrent nervures.

This species may be known from *N. montezuma* by being smaller and more slenderly built; the head and thorax bearing a thick silvery pubescence; the basal half of the

mandibles densely covered with a silvery pile; the antennæ more slender, their scape longer in proportion to the following two joints, and distinctly keeled beneath; the metathorax striated laterally, and the middle segment also bearing some stout striations; and the wings much lighter-coloured, not violaceous throughout.

6. **Notogonia tinctipennis.**

Nigra; oculis dimidia longitudine antennarum articuli 3i distantibus; alis fumato-hyalinis, apice late fusco-fumatis.

Long. 13 millim.

Hab. Panama, Bugaba 800 to 1500 feet (*Champion*).

Antennæ pruinose, longer than the head and thorax united; the basal joint a little longer than the second and third joints united, carinated beneath, the base contracted on the lower side into a curve, the extreme base not projecting; second joint curved and narrowed at the base beneath, about one third of the length of the third, the latter almost as long as the fourth. Head covered with a silvery pile, which is very dense on the clypeus and cheeks. Eyes at the top separated by one and a half times the length of the second antennal joint. The depression on the vertex oval; the furrow below the ocellus about three times longer than broad; the frontal depression with a keel in the centre. Clypeus rounded, not incised, the apex shining, impunctate. Mandibles at the base finely rugose, the apex piceous. Thorax covered with a sericeous pile, the pile dense on the sternum and middle segment; pro- and mesothorax aciculate; metanotum finely coriaceous, furrowed down the basal three fourths, the middle segment oblique, furrowed; scutellum shining, impunctate. Abdomen a little shorter than the thorax, sericeous. Pygidium coriaceous, the pile and bristles blackish, the apex rounded; the apical two ventral segments punctured. Legs densely pruinose. The second cubital cellule at the top the length of the space bounded by the first transverse cubital and first recurrent nervures.

A smaller species than *N. argentifrons*. The latter has the clypeus incised, the front not keeled; the middle segment striolated; the wings hyaline; the eyes at the top separated by nearly twice the length of the third antennal joint, &c.

7. **Notogonia beata.** (Tab. IV. fig. 13, ♂.)

Nigra, argenteo-pubescens; clypeo facieque longe cinereo-hirtis; area pygidiali truncata, pube cinerea obtecta; oculis in vertice longitudine antennarum articuli secundi et tertii inter se distantibus; alis violaceo-hyalinis, apice fumatis.

Long. 12 millim.

Hab. Mexico, Orizaba (*H. H. Smith & F. D. Godman*, Dec. 1887).

Antennæ stout, covered with a pale microscopic down; the first joint not much longer than the second and third joints united; the third and fourth joints subequal. Clypeus and cheeks densely covered with a silvery, the front and vertex with a short fuscous, pubescence. Eyes at the top separated by nearly the length of the second and

third antennal joints united. Head opaque, closely punctured; the clypeus at the apex shining, depressed, slightly punctured and rounded, not incised. Thorax opaque, closely punctured, densely covered with a close, short, pale pubescence. Metathorax transversely punctured; the apex irregularly transversely striolated, semiperpendicular. Abdomen short, ovate, sericeous at the junction of the segments; pygidial area broadly truncated at the apex, punctured, and densely covered with silvery-white depressed hairs beneath, shining and impunctate in the middle above, the sides closely punctured and distinctly separated from the central shining part. Legs densely pruinose; the bristles, spines, and calcaria black; the claws reddish at the apex. Wings fusco-hyaline, the apex of a much deeper smoky tint; the second cubital cellule at the top not half the length of the third at the top; the recurrent nervures separated by nearly the length of the top of the second cubital cellule; appendicular cellule completely traced.

8. **Notogonia chrysura.** (Tab. IV. fig. 14, ♂.)

Nigra, argenteo-pilosa; oculis in vertice longitudine antennarum articuli tertii inter se distantibus; area pygidiali pube aurea obtecta; alis fere hyalinis, apice fumatis.

Long. 12·5 millim.

Hab. Mexico, Presidio (*Forrer*).

Antennæ microscopically pilose, the first joint longer than the second and third joints united, hollowed externally above, dilated towards the middle; the second joint about one half the length of the third, the latter almost as long as the fourth. Head opaque, finely coriaceous; the clypeus finely punctured; the vertex sparsely clothed with cinereous hair, the clypeus, cheeks, and sides of the front densely covered with cinereous pubescence; the depression on the vertex round, deep, shining in the centre; the furrow below the ocellus dilated towards the apex; the central depression on the front elongated, deep, the furrow leading to the antennæ indistinct. Clypeus with a narrow keel in the centre, the apex rounded. Eyes above separated by almost the length of the third antennal joint. Thorax finely rugose; the metathorax finely coriaceous, widely furrowed down the centre of the metanotum, the apex irregularly transversely striolated, its furrow deep; scutellum punctured, obscurely furrowed down the middle; mesopleural furrow narrow, almost complete. Mesonotum broadly, but not deeply, furrowed in the middle; there is a shallow depression on the side at the tegulæ, and there is a short deep furrow in front of this depression. Abdomen shorter and narrower than the thorax, the segments at their junction sericeous, the apical one fulvous; pygidium broad, short, densely covered with fulvous-golden bristles and hair; the ultimate and penultimate ventral segments shining, the latter with a thick tuft of bristle-like hair on either side, there being a similar tuft, but shorter, on the preceding segment. Legs slightly pruinose, the metatarsal brush and the tarsal and tibial spines fulvous.

9. **Notogonia argenticauda.** (Tab. IV. fig. 15, ♂.)

Nigra, facie apiceque metanoti longe argenteo-pilosis; area pygidiali pube argentea obtecta; oculis in vertice longitudine antennarum articulorum secundi et tertii inter se distantibus; alis fere hyalinis.
Long. fere 13 millim.

Hab. Mexico, Vera Cruz (*H. H. Smith*).

Antennæ stout, as long as the thorax; the joints gradually dilated towards the middle; the first joint longer than the second and third joints united; the second joint about three fourths of the length of the third, the latter shorter than the fourth. Head semi-shining, strongly aciculate, the clypeus and face covered with short silvery hair. Eyes at the top separated by the length of the second and third antennal joints united. Clypeus broadly projecting in the middle and rounded at the apex, scarcely keeled in the centre. Mandibles without teeth on the inner side. Thorax closely covered with down, which varies in colour from silvery to fulvous; alutaceous, the metathorax much more coarsely so; the apex of the latter hardly punctured, densely clothed with hair laterally, and deeply furrowed in the centre. Abdomen elongate-ovate, densely and broadly sericeous at the junction of the segments, but not in the centre. Pygidial area bluntly truncated at the apex, covered with silvery hair; beneath shining, slightly punctured. The ventral surface bears a rufous down, and on the apex of the second segment is a tuft of long rufous hair. Legs pruinose, the spines and spurs black. Wings smoky-hyaline, from the base of the radial cellule fuscous; the second and third cubital cellules at the top subequal; the recurrent nervures separated by the length of the second cubital cellule at the top; appendicular cellule complete.

10. **Notogonia apicipennis.** (Tab. IV. figg. 16, ♀; 16 *a*, ♂.)

Nigra; area pygidiali pube cinerea obtecta; oculis in vertice longitudine antennarum articuli tertii inter se distantibus; alis flavis, apice fere fumatis.
Long. (♂) 10 millim.; (♀) 12–13 millim.

Hab. Panama (*Boucard*).

Antennæ as long as the head and thorax united, rather densely microscopically pilose; first joint distinctly longer than the second and third joints united, not carinate beneath; second joint becoming gradually, but slightly, thickened towards the apex and fully half the length of the third, the latter equal in length to the fourth. Head minutely punctured; clypeus broadly rounded at the apex, scarcely projecting. Mandibles densely pilose at the base, the middle piceous, glabrous, impunctate. Front, face, cheeks, and clypeus (except at the apex) densely covered with a close fulvous, mixed with silvery, pubescence. Eyes separated at the top by the length of the third antennal joint. Thorax opaque, minutely rugose; a thick edging of fulvous hair along the sides of the meso- and metanotum, and on the greater part of the apex of the latter; metanotum finely rugose, scarcely furrowed in the centre, the middle segment semiperpendicular and deeply, but not widely, furrowed in the centre. Abdomen narrower than,

and nearly as long as, the thorax, the apex acuminate, the segments broadly pilose at their apices. Pygidium elongated, the apex rounded, densely covered (except upon an elongated cone-shaped space at the base) with a fulvous pile, impunctate; beneath, and the penultimate segment also, with scattered punctures. Legs pruinose, the hair on the spur and metatarsus reddish-fulvous.

11. **Notogonia panamensis.** (Tab. IV. fig. 17, ♂.)

Nigra, cinereo-pubescens; facie apiceque metanoti argenteo-pilosis; area pygidiali pube fulva obtecta; oculis in vertice fere longitudine antennarum articuli tertii inter se distantibus; alis flavo-hyalinis, apice fere fumatis.

Long. 10 millim.

Hab. PANAMA, Bugaba, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Antennæ almost bare; the basal joint somewhat longer than the second and third joints united; the second joint one third the length of the third, the latter, if anything, longer than the fourth. Vertex and front but very slightly pilose; the face and clypeus covered with golden or silvery hair. Eyes at the top separated by the length of the third antennal joint. Front moderately depressed; an indistinct furrow above and a very distinct and broad one below the ocellus, and there is a longish furrow which commences a little below the latter and reaches to the antennæ. Clypeus rounded at the apex, shining and impunctate there, and with a small incision in the middle. Mandibles rufous towards the centre, the central furrow deep. Thorax opaque, alutaceous, sparsely covered with a short pale pile, the pile more distinct on the metathorax, especially on either side of the metanotum, where it assumes a fulvous hue. Mesonotum slightly depressed in front; metanotum finely coriaceous, narrowly furrowed down the middle, the apex oblique and with the furrow wider and deeper. Abdomen, if anything, longer than the thorax, elongate, narrowed gradually towards the apex, the latter bearing a silvery or fulvous pile, opaque, almost alutaceous. Pygidial area with the bristles dark fulvous and intersected with silvery hairs; the apical bristles stout, dull fulvous. Beneath and at the base the apical segment is sparsely punctured; the penultimate ventral segment is also sparsely punctured, and the middle segments bear a silvery soft pubescence. Legs pruinose; the spines and spurs black, the metatarsal brush fulvous. Third cubital cellule hardly extending beyond the apex of the radial cellule; the second cellule at the top is as wide there as the third; the recurrent nervures are united.

TACHYTES.

Tachytes, Panzer, Krit. Revis. ii. p. 129 (1806); Kohl, Verz. zool.-bot. Ges. Wien, 1884, p. 101.
Lyrops, Illiger, in Ross. Faun. Etrusc. 2nd edit. ii. p. 161 (1807).
Tachyptera, Dahlbom, Hymen. Eur. i. p. 133.

Tachytes is readily known from *Larra* and *Notogonia* by the head being flat along

the inner side of the eyes, and not raised into more or less blunt ridges. The metathorax is usually shorter, or, at least, hardly longer, than the mesothorax, and rounded at the apex; the body is hairy and bee-like; and the apex of the radial cellule is rounded. Nearly 150 species of *Tachytes* (and *Tachysphex*) have been described from all the zoological regions; and sixteen are known from North, and twenty-four from South America.

1. **Tachytes yucatanensis.** (Tab. IV. fig. 18, ♀.)

Niger; tibiis tarsisque ferrugineis; alis fulvo-fumatis. ♀.
Long. 17–18 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

Antennæ sparsely microscopically pilose, the scape bearing long white hairs; the third joint about one quarter longer than the fourth. Head below the ocelli covered thickly with rather long fulvous hair, the front, vertex, and occiput more sparsely with fuscous, intermixed with pale, hair. Eyes at the top separated by about the length of the second and third antennal joints united; ocelli surrounded by a distinct margin and by a furrow on the outer side of the latter. Vertex and front opaque, closely punctured. Clypeus closely punctured; the apex broadly rounded, slightly projecting. Mandibles at the base reddish and closely covered with short fulvous hair; palpi rufous. Thorax opaque, closely and rather strongly punctured; the pronotum above and the pleuræ and sternum bearing pale golden hair, the sides of the mesonotum thickly covered with fulvous hair; the rest of the mesonotum and metanotum with long pale fuscous hair. There is an elongated fovea in the centre of the metanotum at the apex. Abdomen as long as, or a little longer than, the thorax, shining, aciculate; the sides of the basal three segments bearing a silvery pile. Pygidial area with a distinct lateral margin, rather sharply rounded at the apex, and covered thickly with deep coppery-golden pile; apical ventral segment at the apex bearing some large coarse punctures and some long hairs; the penultimate segment also punctured at the apex and bearing some long rufous hairs; the ventral segments pale at the apices. Legs bearing a golden or silvery pile, the spines and spurs rufous; the tarsal spines paler than the tibiæ; the hind tibiæ broadly blackish in the middle; the claws blackish. The second cubital cellule at the top is a little shorter than the third, and somewhat longer than the space bounded by the two recurrent nervures.

2. **Tachytes guatemalensis.** (Tab. IV. fig. 19.)

Niger, fusco-hirtus; alis fere hyalinis, antice fulvo-fumatis. ♀.
Long. 16 millim.

Hab. GUATEMALA, Mirandilla 1700 feet (*Champion*).

Antennæ not much longer than the pro- and mesothorax united, thick, the flagellum

microscopically pilose, the first joint sparsely covered with long fulvous hair; first joint considerably narrowed at the base, as long as the second and third joints united; second joint a little more than one third the length of the third, and half the length of the fourth. Head opaque, minutely punctured, the cheeks and clypeus covered with long fulvous-golden hair, the rest of the head more sparsely clothed with pale fulvous hair. Clypeus distinctly punctured, the apex entire, broadly rounded. Base of the mandibles apparently striated, densely covered with obscure golden pile; the middle bears some rather long reddish hair and a few large punctures; the apex piceous-red. Thorax opaque, minutely punctured, the punctures distinctly separated, covered with a fulvous pubescence, which is especially long on the sternum. Metanotum with a gradual rounded slope, impunctate (or the punctures only visible under a high power), an elongated fovea at the apex in the middle; the apex keeled down the centre, rounded, oblique. Abdomen as long as the thorax, strongly aciculated; the basal ventral segments aciculated, almost impunctate in the middle, the penultimate and the apical half of the last punctured, the latter strongly. Pygidial area roughly longitudinally striated, and covered with fiery-red bristly pubescence; the apex sharply rounded, the keels raised, especially towards the apex.

√ 3. **Tachytes andreniformis.** (Tab. IV. fig. 20.)

Niger, fulvo-hirtus, abdominis segmentis cinereo-pilosis; alis fere hyalinis.
Long. 13 millim.

Hab. Mexico, Vera Cruz (*H. H. Smith*, Jan. 1888).

Antennæ filiform, longer than the head and thorax united, sparsely microscopically pilose; the basal joint covered with long fulvous hair, scarcely so long as the second and third joints united; the second joint scarcely half the length of the third, the latter a little longer than the fourth. Face, clypeus (except at the apex), and cheeks bearing long fulvous hair, the hair hiding the surface; the vertex more sparsely clothed with long fulvous hair, opaque, closely punctured. Eyes distinctly converging at the top, where they are separated by a little more than the length of the third antennal joint. There is a triangular depression above the ocelli, and the latter are situated on an elevation; an indistinct furrow runs down from them. Apex of the clypeus projecting in the middle, the projection rounded and with a slight waved incision on either side of it. Mandibles closely rugosely punctured at the base, reddish towards the middle. Thorax opaque, the scutellum distinctly punctured, covered with long fuscous hair and more densely along the sides of the mesonotum with fulvous hair; on the pleuræ the hair is sparser. Abdomen sparsely covered with fuscous hair, the segments bearing a fringe of cinereous hair, which is almost interrupted in the centre. The ventral segments bear at their junction a few long fulvous hairs. Pygidial area broad, the apex broadly rounded and whitish; the surface with black, mixed with rufous, hairs. Apical ventral segment punctured. Coxæ, trochanters, and femora covered with fuscous, the

anterior femora with fulvous, hair; tibiæ densely pruinose, the spines and spurs rufous; tarsi with the spines pale rufous.

4. **Tachytes argentipes.**

Niger; facie, clypeo thoraceque dense fulvo-argenteo-pilosis; pedibus argenteo-pilosis; alis hyalinis.
Long. 13 millim.

Hab. Panama, Bugaba (*Champion*).

Antennal scape covered with long pale fulvous hair; the flagellum almost glabrous, but pruinose under a strong lens; the third joint not much longer than the fourth. Head opaque, alutaceous; the clypeus, face, cheeks, and front covered densely with fulvous hair, which has a slight silvery, or even golden, tinge; the vertex and upper part of the front much more sparsely covered with long black or fulvous-black hair. Vertex depressed in the centre, the depression broadest at the apex; there is a wide furrow above the ocellus. The eyes at the top are separated at the narrowest part by a little more than the length of the second and third antennal joints united. Clypeus rounded, margined at the apex. Mandibles bearing long golden-fulvous hairs on the basal half, the apical half reddish, with a black stripe down the middle. Thorax alutaceous, the mesonotum finely punctured; the sternum, the lower and front part of the pleuræ, and the metapleuræ densely covered with fulvous hair; the pronotum sparsely covered with long pale hair; the mesonotum and middle segment with fuscous hair. Abdomen nearly as long as the head and thorax united, and almost narrower at its widest part than the latter, becoming gradually narrowed from the base of the second segment. The petiole bears long fuscous hair; the sides of the second and following segments, and the three apical segments above, densely covered with moderately long fulvous hair. Pygidial area densely covered with black (having in certain lights a fulvous tinge) bristle-like depressed stiff pile, and with a few long black hairs; the apex rounded, without hair or bristles; beneath, the central part is impunctate, laterally bearing scattered punctures. The other ventral segments have also scattered punctures and are pale at the apex. Legs closely covered with silvery pile, the pile especially bright and thick on the outer side of the tibiæ; the spurs and tarsal spines are bright fulvous; behind, the hind tibiæ bear three rows of thick spines, but only the hinder row is complete; there are only two incomplete rows of spines on the middle pair, and in front there are a few long flexible fulvous spines.

5. **Tachytes ornatipes.** (Tab. IV. fig. 21.)

Niger; mandibulis tarsisque rufis; facie metapleurisque longe argenteo-pilosis; area pygidiali pube aurea obtecta; alis clare hyalinis.
Long. 10 millim.

Hab. Guatemala, Paso Antonio 400 feet (*Champion*).

Antennæ stout, microscopically pilose; the first joint with a rather long fringe of

silvery hair on the lower side, the sides also with a silvery pile, the top almost glabrous; first joint a little longer than the second and third joints united, the second half the length of the third. Head large, and wider than the thorax, finely and closely punctured, opaque; the front, cheeks, face, and clypeus, and behind the lower part of the eyes, covered with a close, moderately long, silvery pubescence; the vertex covered with long fuscous hair. Clypeus transverse; mandibles reddish, shining, impunctate, the extreme base covered with silvery pubescence, the other part with a few scattered hairs. Eyes large, converging at the top, where they are separated by about the length of the third antennal joint. Above, and touching the lower ocellus, is a shining impunctate circle, and from the ocellus runs a shallow shining furrow. Thorax opaque, minutely and closely punctured; the pronotum, the sides and the middle segment of the metanotum covered with rather long silvery hair; the rest of the thorax with a dull silvery pile. Metanotum with a distinct furrow, which ends in a pear-shaped hollow, the middle segment with a wider furrow. Abdomen aciculated, the segments with a broad band of silvery hair at their apices, the other parts of them with a shorter pile. Pygidium covered with a dense golden-fulvous stiff pile and with a few longish hairs; the apex rounded. The ventral segments are pale at the edges, where there is a fringe of fulvous pile, aciculated, and with some scattered punctures; the extreme apex bears rather long fulvous hair. Legs covered with a short dense silvery pile; the tibial spines are pale, the hair-fringe on the spurs and metatarsus fulvous, the spurs being pale fulvous.

6. **Tachytes ferrugineipes.** (Tab. IV. fig. 22, ♂.)

Niger; pedibus rufis; capite thoraceque longe fulvo-pilosis; alis hyalinis, basi fere flavo-hyalinis. ♂.
Long. 13 millim.

Hab. Panama (*Boucard*).

Antennæ shorter than the thorax; the scape covered with long pale fulvous hair; the flagellum with a microscopic pile; the third joint nearly one quarter longer than the fourth. Head from below the ocellus densely covered with long fulvous hair, the hair hiding the surface completely; the vertex alutaceous, opaque, densely covered with fuscous hair, and depressed in the centre. Eyes at the top separated by a little more than the length of the third antennal joint. Apex of the clypeus rather sharply rounded, slightly projecting. Basal half of the mandibles ferruginous. Thorax covered all over with rather long fulvous hair, but more sparsely so on the mesonotum, the latter alutaceous and minutely punctured. Tegulæ reddish. Abdomen elongate, covered with a short, dense, pale pile; the segments at the apex fringed broadly with pale fulvous hair. Legs covered with a pale pile; the anterior and intermediate femora are black to near the apex, the posterior pair broadly so at the base.

TACHYSPHEX.

Tachysphex, Kohl, Deutsche ent. Zeitschr. xxvii. p. 166; Verh. zool.-bot. Ges. Wien, 1884, p. 347.

This genus is separated from *Tachytes*, auct., by Kohl, and seems to represent a well-defined group. *Tachysphex* is distinguished from *Tachytes* by the naked pygidial area, the metatarsal brush of the fore tibiæ formed of very long flexible bristles, and the form of the body not quite so bee-like. It contains numerous species, and is found in most of the warm and temperate regions of the globe.

1. **Tachysphex psilocerus.**

Tachysphex psilocerus, Kohl, Verh. zool.-bot. Ges. Wien, 1883, p. 374[1].

Hab. Mexico, Chapultepec (*Bilimek*[1]).

2. **Tachysphex rufo-maculatus.** (Tab. IV. fig. 23, ♀.)

Niger, fulvo et cinereo-pilosus; femoribus (basi nigra), tibiis, tarsis abdominisque segmentis 2° et 3° rufis; alis hyalinis.

Long. 11½ millim.

Hab. Mexico, Atoyac in Vera Cruz (*Schumann*).

Antennæ sparsely microscopically pilose, the scape covered with pale hair, the third and fourth joints subequal. Head opaque, alutaceous; the front and vertex covered with fuscous hair, the cheeks, face, and clypeus with fulvous, mixed with silvery, hair. Eyes at the top separated by nearly the length of the second and third antennal joints united. Ocellar area raised, furrowed down the centre. Apex of the clypeus projecting in the middle, shining, marked with punctures. Mesothorax shining, rather strongly punctured; the metathorax opaque, coarsely aciculate. The pleuræ are covered with rather long pale silvery hair; the pronotum and the sides of the mesonotum with pale fulvous, and the rest of the thorax with fuscous, hair. The fovea at the apex of the metanotum is pear-shaped. Abdomen somewhat shorter than the thorax, shining, hardly punctured, and bearing a silvery pile; black, the base and apex of the petiole, the greater part of the second and third segments, and the apical half of the other segments, rufous. Pygidial area broad, bare, coarsely punctured, the apex red and broadly rounded. Legs bearing a silvery pubescence, the spines clear white, the spurs pale red. Wings:—the costa and stigma are obscure testaceous, the nervures at the base are fuscous, at the apex blackish; the second and third cubital cellules at the top are subequal and a little longer than the space enclosed by the recurrent nervures; the latter are received in front of the middle of the cellule, and the other nervures are irregular.

ASTATA.

Astatus, Latreille, Précis des caract. gén. des Ins. p. 114 (1796).
Astata, Latreille, Hist. Nat. des Crust. et des Ins. xiii. p. 297 (1805).

Of this genus upwards of forty species are known, from all the zoological regions.

a. *Abdomen black.*

1. **Astata albovillosa.** (Tab. V. fig. 3, ♀.)

Nigra, longe albo-hirta, punctata; segmento mediali striolato; alis fusco-violaceis, nervis nigris. ♀.
Long. 16–17 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Basal joint of the antennæ strongly punctured, covered with long greyish hairs; the third joint one and three quarter times longer than the fourth, slightly curved, and gradually thickened towards the apex. Head shining, covered with long greyish hair, in front rounded, bulging out in the middle, closely covered with shallow punctures, which are much fewer in number on the vertex. Clypeus with the apex in the middle almost transverse, slightly projecting. Mandibles (especially on the basal half) bearing large punctures, and with rather long brownish hairs. Eyes at the top separated by about the length of the fourth and fifth antennal joints united. Thorax shining, punctured, but not strongly, the basal half of the scutellum almost entirely impunctate, the median segment longitudinally striolated; the hair on the top is fuscous, on the pleuræ and sternum it is longer and cinereous. Median segment with a gradual slope; the scutellum with a furrow in the centre. Abdomen nearly as long as the meso- and metathorax united, shining, with some punctures; the base, the sides, and ventral surface sparsely covered with pale hairs; the penultimate dorsal segment is pale at the apex, and bears there a fringe of fuscous hair. Pygidial area a little longer than the width of the base, glabrous, rugosely punctured; the sides raised and spinose-haired throughout; the apex rounded, reddish. Penultimate segment incised at the apex and depressed in the middle. Coxæ and trochanters thickly, and the femora more sparsely, covered with long grey hair, the tibiæ and tarsi thickly spinose; the spines on the hind tarsi and the claws more or less rufous. Radial cellule a little shorter than the second and third cubital cellules united, its apical nervure curved; the first cubital nervure is shorter than the second, which is more than twice the length of the third; the second cubital nervure at the top is one fourth shorter than the space bounded by the recurrent nervures.

2. **Astata strigosa.**

Astatus strigosus, Kohl, Verh. zool.-bot. Ges. Wien, xxxviii. p. 147[1].

Hab. MEXICO, Orizaba (*Bilimek*[1]); COSTA RICA, Cache (*Rogers*).

As I am not quite sure about the identity of the Costa-Rican specimen with Kohl's species, I give a description of it:—

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Antennæ thick, sparsely haired, the third joint more than one half longer than the fourth. Head shining, punctured, the punctures clearly separated; the face and cheeks sparsely covered with long white hair. Clypeus truncated at the apex, projecting. Mandibles indistinctly punctured, an obtuse short thick tooth below the apex, covered with long hair, the hair inclining to fulvous on the lower side. Thorax shining, above almost glabrous; the sides and sternum covered with long white woolly hair; pronotum closely transversely punctured; mesonotum obscurely pitted with indistinct, widely separated punctures; scutellum almost impunctate; mesopleuræ (especially in front) distinctly punctured; median segment longitudinally striolated (but with the striolæ diverging towards the apex); the pleuræ obliquely, the oblique apex rugosely, punctured, and with a pear-shaped, shining, impunctate depression in the centre, the apex sparsely haired. Abdomen shining, impunctate, glabrous; pygidium opaque, finely and closely granulate-punctate; the sides distinctly keeled, the keels raised above the central portion, which is very slightly convex; the extreme apex rufous. Legs shining, the coxæ, trochanters, and femora covered with long white woolly hair; the tibiæ sparsely and stoutly spined, pruinose on the outer side; the tarsi inclining to piceous. Wings deep violaceous; the first recurrent nervure received a little beyond the middle of the cellule; second cubital cellule considerably narrowed at the top, which is not much more than half the distance bounded by the second recurrent and the second transverse cubital cellule; nervures deep black.

Length 11–12 millim.

The colour of the body is a very deep black, inclining to plumbeous. At the top, the eyes are separated by a little more than the length of the third antennal joint. The pronotum has the part next the head rising obliquely but not abruptly, and thence rises gradually to the apex, being but slightly convex in the centre; the apex is raised, distinctly separated by the hollow thus formed from the mesonotum, there being also a distinct margin on it in front of the latter.

Besides being considerably smaller, *A. strigosa* differs from *A. albovillosa* in the hair being sparser; the depression at the base of the clypeus deeper; the head not projecting so much in the centre in front and less punctured; the mesonotum scarcely punctured; the scutellum not furrowed in the middle; the pygidial area longer, being fully one and a half times the width of the base in length; the apex of the dorsal penultimate segment without a distinct fringe of hairs; the penultimate ventral segment not incised, &c.

3. **Astata apicipennis.** (Tab. V. fig. 1.)

Nigra; capite punctato, pleuris segmento medianeque rugoso-reticulatis, dense fusco-pilosis; alis hyalinis, apice fumatis, nervis pallidis.

Long. 12 millim.

Hab. Mexico, Presidio (*Forrer*).

Antennæ as long as the thorax; the base sparsely pilose; the third joint curved, longer than the fourth. Head shining, somewhat strongly punctured; the face and front bearing rather long pale fuscous hair; the vertex sparsely and microscopically pilose. Mandibles with some large irregular punctures towards the apex, and hollowed in the centre there, and, except at the extreme tip, reddish. Clypeus rounded, the apex margined; the centre slightly incised; the base depressed; the sides semiopaque, closely punctured; the central part shining, sparsely covered with large punctures. Prothorax closely punctured; mesonotum shining, the sides punctured, the centre almost impunctate. Scutellum strongly punctured round the edges, the centre only sparsely punctate. Mesopleuræ rugosely reticulated; sternum strongly punctured; metapleuræ obliquely striolated; median segment rugosely reticulated, the apex rugose. Abdomen shining, almost impunctate. Pygidial area opaque, finely rugose, almost glabrous, margined at the sides; a few stout bristles issue from the edges near the apex. Femora bearing black hair, the tibiæ and tarsi stiffly spinose; the apices of the tarsi (especially of the anterior pair) reddish. Radial cellule scarcely so long as the second and third cubital cellules united; the radial nervure at its apex turned sharply backwards towards the stigma; the second cubital cellule one half longer than the third, and scarcely so long as the first at the bottom, at the top shorter than the space bounded by the recurrent nervures. Tegulæ brownish.

4. **Astata tinctipennis.**

Nigra, longe albo-hirta; capite (vertice excepto) punctato; pleuris rugoso-punctatis; segmento mediali reticulato; mesonoto cum scutello nitidis, lævis; alis hyalinis, apice fusco-tinctis. ♀.
Long. 9 millim.

Hab. Mexico, Presidio (*Forrer*).

Antennæ as long as the thorax, bearing a microscopic down; the third joint nearly one fourth longer than the following one. Face, front, cheeks, and occiput bearing long cinereous hair, and strongly punctured to the ocelli; the vertex behind them being shining, and with only a few scattered punctures. Clypeus rounded, the apex projecting, only slightly shining in the middle, the sides more opaque, and closely punctured. Mesonotum and scutellum shining, punctured, the former posteriorly and the scutellum but sparsely so. Pleuræ and sternum rugosely punctured; median segment reticulated, the apex with an oblique slope, rugose. Except on the scutellum and mesonotum, the thorax is covered with moderately long white hair. Abdomen not much longer than the mesothorax, shining, impunctate. Pygidial area closely punctured; the sides raised and bearing throughout a fringe of stout bristles; the centre is for the greater part reddish. Femora sparsely haired; tibiæ and tarsi thickly spinose. Radial cellule shorter than the second and third cubital cellules united, the apex bent sharply backwards; the third cubital cellule at the bottom is as long as the space bounded by the first recurrent nervure and the second transverse cubital nervure;

the second cubital cellule at the top is half the length of the space bounded by the recurrent nervures.

Not unlike *A. apicipennis*, but smaller, and easily known from it by the thorax and head being densely clothed with long hair; the much more strongly rugose pleuræ and median segment; the shorter abdomen; and the pygidial area much more clearly raised at the edges, and furrowed on the inner side of them, the edges, moreover, being spinose throughout. The first cubital cellule is clearly longer than the second.

b. *Abdomen red.*

5. **Astata kohli.** (Tab. V. fig. 2, head from in front; 2*a*, antenna.)

Nigra, nitida, segmento mediali opaco; abdomine rufo; alis fumatis, basi fere hyalinis. ♀.
Long. fere 8 millim.

Hab. Mexico, Ventanas in Durango 2000 feet (*Forrer*).

Head almost transverse, distinctly broader than the thorax, rather strongly, but sparsely, punctured on the top; the face and vertex closely and rugosely punctured, almost opaque; clypeus shining, sparsely punctured. Eyes slightly converging towards the top; ocelli in a triangle. Clypeus projecting in the middle, and with three short, stout teeth there, broadly and roundly carinate down the centre. Mandibles broadly red before the apex. Antennæ stout; the third joint one fourth longer than the succeeding. Pro- and mesonotum shining, covered with large scattered punctures, the mesonotum with two indistinct fine furrows in the centre towards the apex, the space bounded by these being depressed; pleuræ rugose, opaque; sternum shining, sparsely punctured. Median segment opaque, finely rugose, the apex oblique and coarsely transversely rugose. Abdomen a little shorter than the thorax, shining, sparsely haired. Pygidial area shining, finely aciculate, indistinctly margined laterally, the apex rounded. Appendicular cellule longer than the radial, which is not much longer than the second and third cubital cellules united; the second cubital cellule at the top and bottom is wider than the third, and at the top is narrower than the space bounded by the recurrent nervures, which are received near the apical and basal fourth of the cellule; the second transverse cubital nervure is straight, the first is slightly bent, the third is broadly curved outwardly. Legs: the coxæ and femora bearing black hair; the tibiæ and tarsi moderately spinose.

6. **Astata picta.**

Astatus pictus, Kohl, Verh. zool.-bot. Ges. Wien, xxxviii. p. 146 [1].

Hab. Mexico (*Bilimek* [1]).

Allied to *A. kohli*, but easily known from it by the clypeus only projecting (not toothed) in the middle.

7. **Astata mexicana.**

Astata mexicana, Cresson, Proc. Ent. section Ac. Phil. in Trans. Am. Ent. Soc. ix. p. v[1].

Hab. Mexico (*Sumichrast*[1]).

8. **Astata alpestris.** (Tab. V. figg. 4; 4 *a*, head from in front; 4 *b*, antenna.)

Nigra, abdomine rufo; sparse punctata, longe albo-villosa; segmento mediali striolato; alis hyalinis, apice fumatis. ♀.

Long. 8½ millim.

Hab. Mexico, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Antennæ stout, densely covered with a close white microscopic pile, the third joint not much longer than the fourth. Head broad, sharply retreating behind the eyes; the face and oral region covered with long pale hair, the occiput and vertex with more scattered and shorter hair; the face and front closely and rather strongly punctured, the vertex more sparsely, the punctures on the latter being much more widely separated, and almost absent behind the ocelli. Eyes very slightly converging on the top; ocelli hardly forming a triangle, the anterior ocellus in a pit, the posterior ocelli separated from each other by a greater distance than they are from the eyes. Clypeus rounded in the middle at the apex. Mandibles piceous at the apex. The sides of the pronotum coarsely rugose; mesonotum very shining, sparsely and finely punctured, the pleura strongly punctured; scutellum with very few punctures. Median segment striolated, the striolæ running into reticulations; the apex with an oblique slope, transversely rugosely punctured; metapleuræ obliquely striolated. The sides of the thorax bear long white hairs. Abdomen black at the extreme base, finely aciculate. Legs stout; the tibiæ (especially the two hinder pairs) strongly and stoutly spinose; the tarsi also strongly spinose, rufous towards the apex. Radial cellule short, the appendicular cellule nearly as long as it, and oblique at the apex; the second cubital cellule very narrow at the top, not half the length of the space bounded by the recurrent nervures, the latter being almost the length of the third cubital cellule above.

[Kohl (Verh. zool.-bot. Ges. Wien, xxxiv. p. 447) gives *A. cærulea*, Cresson, as from Mexico, no other locality being given; but Cresson himself (Proc. Ent. section Ac. Phil. in Trans. Am. Ent. Soc. ix. p. iv) gives Nevada as the habitat.]

Fam. NYSSONIDÆ.

I use this term merely for convenience, and not that I consider the group of *Nysson* and its allies to form a family of equal taxonomic value with, say, the Pompilidæ or Mutillidæ.

As the admirable Monograph of Handlirsch (Sitz. der k. Akad. der Wissensch. Wien, 1887 *et seq.*) is indispensable to every student of these insects, I have followed his arrangement of the genera.

BOTHYNOSTETHUS.

Bothynostethus, Kohl, Verh. zool.-bot. Ges. Wien, xxxiii. p. 344 (1884), & xxxiv. p. 449; Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, xcvi. p. 221.

A distinct genus not closely related to any other yet described. Two species are known.

1. **Bothynostethus saussurei.**

Bothynostethus saussurei, Kohl, Verh. zool.-bot. Ges. Wien, xxxiii. p. 346, t. 18. figg. 5, 6[1]; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvi. p. 224, t. 1. figg. 1, 2.

Hab. Mexico, Huastec[1].

ALYSON.

Alyson, Jurine, Nouv. méthode de class. les Hymén. p. 195 (1807); Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, xcvi. p. 235.

A well-known genus of small extent, but of wide range.

1. **Alyson melleus.**

Alyson melleus, Say, Bost. Journ. Nat. Hist. i. p. 380[1]; Complete Writings, ii. p. 762; Packard, Proc. Ent. Soc. Phil. vi. p. 422[2]; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvi. p. 253[3]; Cresson, Trans. Am. Ent. Soc. 1887, Suppl. p. 280.

Hab. North America[1 2 3], New Jersey, Indiana, Illinois, Virginia, Texas.—North-west Mexico[3].

NYSSON.

Nysson, Latreille, Hist. Nat. des Crust. et des Ins. iii. p. 340 (1802); Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, xcv. p. 281 (1887).

Paranysson, Guérin, in Cuvier's Icon. Règn. Anim. p. 441; Cresson, Trans. Am. Ent. Soc. ix. p. 273.

Acanthostethus, Smith, Trans. Ent. Soc. Lond. 1869, p. 306.

Hyponysson, Cresson, Trans. Am. Ent. Soc. ix. p. 273.

This genus is cosmopolitan, and found in all parts of the world. Nearly seventy species are known, of these twenty-one are from North America or Mexico, and eight from South America.

i. *Posterior tibiæ serrate; lateral margin of the scutellum strongly reflexed; post-scutellum bilobed; apex of the abdomen generally with four teeth.* (Paranysson.)

1. **Nysson mexicanus.**

Nysson (*Paranysson*) *mexicanus*, Cresson, Trans. Am. Ent. Soc. ix. p. 275[1].

Nysson mexicanus, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcv. p. 303.

Hab. Mexico (*Sumichrast*[1]).

2. **Nysson dives.**

Nysson dives, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcv. p. 309, t. 4. figg. 8, 24[1].

Hab. Mexico, Orizaba[1].

ii. *Posterior tibiæ not serrate; lateral margin of the scutellum not reflexed; post-scutellum narrow, not bilobed; apex of the abdomen (♂) with not more than two spines.* (Nysson.)

3. **Nysson zapotecus.**

Nysson zapotecus, Cresson, Trans. Am. Ent. Soc. ix. p. 280[1]; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcv. p. 360.

Hab. Mexico (*Sumichrast*[1]).

4. **Nysson aztecus.**

Nysson aztecus, Cresson, Trans. Am. Ent. Soc. ix. p. 279[1]; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcv. p. 361.

Hab. Mexico (*Sumichrast*[1]).

GORYTES.

Gorytes, Latreille, Hist. Nat. des Crust. et des Ins. xiii. p. 308 (1805); Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 316 (1888).

Gorytes has been divided into many "genera"—*Harpactus*, *Hoplisus*, *Lestiphorus*, *Euspongus*, &c.; but, as Handlirsch has shown, the characters upon which they are grounded merge completely the one into the other, so that most of them can hardly be even used for divisional purposes. The Central-American species, with the exception of *G. bipunctatus*, which, as regards the neuration of the hind wings, is a *Hoplisus*, all belong to *Gorytes*, Cresson, that is, they have the median nerve received beyond the posterior transverse nervure.

In the excellent Monograph of Handlirsch, 121 species are described from all parts of the world. I have followed here, as closely as possible, his arrangement of the species.

i. *Median nervure of the hind wing received considerably before the posterior transverse nervure; both the recurrent nervures interstitial.* (Euspongus, *Cress.*)

1. **Gorytes bipunctatus.** (Tab. V. figg. 11; 11 *a*, head from in front; 11 *b*, antenna.)

Gorytes bipunctatus, Say, in Long's Second Expedition, p. 338[1]; Complete Writings, i. p. 228; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 355[2].

Lestiphorus bipunctatus, Dahlb. Hymen. Europ. i. p. 157.

Euspongus bipunctatus, Dahlb. Hymen. Europ. i. p. 480; Cresson, Trans. Am. Ent. Soc. 1887, Suppl. p. 280[3].

Hab. North America, Pennsylvania [1 2 3], Georgia [2], Tennessee [2], South Carolina [2].—Mexico [2], Presidio (*Forrer*), Temax in Northern Yucatan (*Gaumer*).

2. **Gorytes championi.**

Nigro-æneus, nitidus, lævis, vix punctulatus; scapo antennarum subtus, clypeo, basis mandibularum, margine pronoti, scutello, metanoto, abdominis maculis duabus, tibiis tarsisque anterioribus, basi tibiarum posticarum medioque tarsorum posticis, albis; alis hyalinis. Segmento mediali nitido, non striolato.

Long. $6\frac{1}{2}$ millim.

Hab. Guatemala, San Gerónimo (*Champion*).

Basal joint of the antennæ curved, a little longer than the third and fourth joints united, the third and fourth subequal; the flagellum thickened gradually to the apex, the joints each a little longer than broad, brownish beneath. Head margined behind the eyes, not much developed, and retreating; front and vertex with short, the clypeus densely covered with a longer, silvery-white pubescence; palpi white; eyes large, strongly faceted, reaching to the base of the mandibles, converging beneath; hinder ocelli separated from each other by nearly twice the distance they are from the eyes; a narrow furrow runs from the ocelli to the antennæ, which are inserted considerably above the base of the clypeus; the latter is convex, broadly rounded at the apex. Thorax shining, rather closely covered with whitish pubescence; the median segment with long soft white hair; median segment impunctate; the dorsal area clearly limited, but neither punctured nor striolated; mesopleuræ punctured; the mesosternal furrow obsolete. Abdomen shining, impunctate, a little longer than the thorax; the petiole longer than the second segment, the apical half widely dilated, beneath obscure brownish-white; the second segment with a white line on either side above; apical segment short, broad, rather strongly punctured. Legs densely covered with white pile; the tips of the intermediate tarsi blackish; the hind tarsi black, except the greater part of joints 2 and 3; tibiæ sparsely spined.

G. championi differs from *G. bipunctatus* and its allies in having the median segment not striolated at the base and not punctured. In *G. championi* the head and thorax (especially the mesonotum) have a much more violaceous tint than the abdomen; the second cubital cellule is, at the bottom, shorter than the third; the first recurrent nervure is received before the transverse cubital, the second is interstitial.

ii. *Median nervure of the hind wing received beyond the posterior transverse nervure, or interstitial; the recurrent nervures not interstitial.*

A. *Eyes not converging beneath; median segment usually punctured, its base with a more or less triangular striolated area.*

3. **Gorytes fuscus.** (Tab. V. fig. 10.)

? *Gorytes vespoides*, Smith, Ann. & Mag. Nat. Hist. (4) xii. p. 407 [1].

Hoplisus fuscus, Taschenberg, Zeitschr. f. Naturw. xlv. p. 368 [2].
Gorytes fuscus, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 377 [3].

Hab. NORTH AMERICA, Connecticut [3].—MEXICO, Cordova [3], Orizaba [3], Temax in Northern Yucatan (*Gaumer*); GUATEMALA, San Joaquin in Vera Paz (*Champion*).—AMAZONS, Ega [1]; BRAZIL, Rio Janeiro [2].

4. Gorytes robustus.

Gorytes robustus, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 380 [1].

Hab. MEXICO, Tampico [1].—SOUTH AMERICA, Brazil [1].

5. Gorytes cayennensis.

Hoplisus cayennensis, Spinola, Ann. Soc. Ent. Fr. x. p. 116 [1].
Gorytes cayennensis, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 385 [2].
Gorytes sericatus, Smith, Cat. Hym. Ins. iv. p. 363 [3].
Hoplisus anthracipennellus, Taschenberg, Zeitschr. f. Naturw. xlv. p. 366 [4].

Hab. MEXICO, Orizaba (*Bilimek* [2]), Cordova (*Saussure* [2]).—SOUTH AMERICA, Colombia [2 4], Cayenne [1], Brazil [3 4].

6. Gorytes maculipennis. (Tab. V. figg. 12; 12 *a*, head from in front; 12 *b*, antenna.)

Niger, nitidus; thorace superne sparse punctato; scapo antennarum, margine clypei, orbitis oculorum, margine pronoti, scutello, fascia metanoti, maculis 2 in segmento mediali, tegulis fasciisque 4 abdominis, flavis; alis fere hyalinis, fasciis 3 fuscis.
Long. 7 millim.

Hab. PANAMA, Bugaba (*Champion*).

Antennæ stout, subclavate; the scape elongate, narrow, yellow beneath; the basal three-fourths of the flagellum brownish beneath; the third joint distinctly longer than the fourth. Head not much broader than the thorax, shining, impunctate, covered with a close fuscous pile; the clypeus with silvery hair; eyes almost parallel; hinder ocelli separated by a little more than the distance which separates them from the eyes; front not depressed, and without keel or furrow beyond a very thin indistinct furrow over the antennæ; clypeus short, broadly rounded, depressed at the base, fringed all round with silvery hair; mandibles piceous, blackish at the tips. Thorax above sparsely covered with a fuscous pile, the metapleuræ and sternum with a thicker and longer dull silvery pile, shining; the mesonotum and apex of the median segment covered with shallow punctures; the median area in the middle extends to near the centre of the median segment; the twelve keels gradually decrease from the centre to the sides, and are not distinctly bordered; the middle furrow is narrow, but distinct and continuous; mesosternal furrow narrow, but distinct. Abdomen a little longer and narrower than the thorax; the petiole and first segment impunctate; the other

segments not so shining, almost alutaceous, and punctured; pygidial area keeled laterally, bluntly acute at the apex, bearing deep elongated punctures, and sparsely pilose. Ventral segments with scattered punctures; the last strongly and closely punctured, rufous, black at the extreme base. Legs sparsely pilose; black behind; the tibiæ lined with yellow in front; the femora (the posterior pair narrowly) dull rufous in front; the tarsi reddish-testaceous; the tibial and tarsal spines and calcaria pale. The clypeus, a line along the inner orbits of the eyes (extending to about three-fourths of the length of the eye), the pronotum, tubercles, a larger spot behind them, scutellum and postscutellum, two large ovate spots on the middle segment, the tegulæ, the tubercles and a mark behind them, and the edges of the abdominal segments, yellow; the base and sides of the petiole rufous. Wings clear hyaline; the radial cellule entirely, a spot at the apex of the subcostal cellule touching the costa, a small cloud in the apex of the first cubital cellule, and the top of the second cubital cellule, blackish; stigma rufo-testaceous; nervures blackish; cubitus very faint beyond the third cubital cellule. Tibiæ spinose, the spines pale; the fore tarsi with the brush rather long.

7. **Gorytes punctifrons.** (Tab. V. figg. 13, head from in front; 13 *a*, antenna.)

Niger, punctatus; segmento mediali rugoso-punctato; ore, orbitis oculorum, scapo subtus, margine pronoti, tegulis, fascia scutelli, tibiis tarsisque anterioribus, marginibus abdominis segmentis, flavis; alis hyalinis, fascia substigmatali fusca. ♀.

Long. fere 6 millim.

Hab. Mexico, Presidio (*Forrer*).

Antennæ covered with a close pale pubescence; the scape yellow; the flagellum brownish beneath; the third joint about one quarter longer than the fourth; the basal joint a little longer than the third and fourth united; the joints projecting beneath; the ninth with a blunt projecting point at the apex. Head sparsely covered with a fuscous pile, the clypeus with silvery-white hair; shining; the front and vertex bearing rather long widely-separated punctures; a wide, but not very deep, furrow below the ocelli; there is a sharp keel above the antennæ. Clypeus waved in the middle, the edges with a thick tuft of hair; palpi testaceous, blackish at the base. Eyes large, very slightly converging beneath. The clypeus, the mandibles (except at the tips, which are fuscous), and the inner orbits of the eyes to near the top, broadly yellow. Thorax clothed with a short, close, pale pile, longest on the breast; bearing large, distinctly separated punctures, which are larger on the middle segment; metapleuræ shining, almost impunctate, broadly hollowed; base of the median segment in the middle longitudinally striolated, the striolated part being margined and produced to a point in the centre; the edge of the pronotum, the tubercles, a larger mark behind, the tegulæ and the scutellum, clear yellow; the centre of the posterior region of the middle segment is hollow and keeled, the keel striolated on either side. Abdomen as long as, but narrower than, the thorax, shining, punctured, the punctures becoming closer and

smaller towards the apex; covered (very closely and thickly on the apical segments) with a grey pubescence; all the segments above broadly banded with yellow; the second segment evidently longer than the first, becoming gradually dilated from the base to the apex; pygidial area triangular, rugosely punctured; the first ventral segment bearing large deep punctures, the other segments finely and irregularly punctured. Legs pilose; the knees, the anterior and intermediate tarsi, their tibiæ in front, the posterior tarsi (except at the apex), the anterior and intermediate tibiæ behind (except a black line in the middle), the hinder tibiæ at the base, and the spurs, yellow, the hinder spurs inclining to rufous. The wings are clear hyaline; the cloud occupies the radial cellule (except a small space at the extreme base), the second cubital cellule (except a narrow band on the lower side), the third cubital cellule (except an oblique triangular part on the lower anterior side), and the space in the discoidal cellule bounded by the recurrent nervures; first and second cubital nervures equally converging above, making the second cubital cellule above less than the space bounded by the two recurrent nervures; cubitus obsolete beyond the third cellule. The mesosternal carina is broad, distinct; there is a moderately broad, semi-oblique, deep furrow at the base of the metapleura. The tibial spines are almost obsolete.

The affinities of this species are clearly with *G. hamatus*, Handl., from Colorado. The latter, however, differs from *G. punctifrons* in having the scape "short and broad"; the basal joints of the flagellum oblique at the apex, the last joint incised, and the apical five not so perceptibly thickened; the ocelli separated by a greater distance from the eyes than they are from one another (the opposite being the case in *G. punctifrons*, in which they can hardly be said to form even a "stumpfwinkeligen Dreiecke," the anterior being but a very short distance in front of the posterior ocelli); the wings smoky (clear hyaline in *G. punctifrons*); the fascia on the pronotum interrupted (continuous in *G. punctifrons*); the scutellum with two marks, and the flagellum entirely, black. *G. hamatus* is also 2 millim. longer than *G. punctifrons*.

8. **Gorytes fasciatipennis.** (Tab. V. figg. 14; 14 *a*, head from in front; 14 *b*, antenna.)

Niger, nitidus, sparse punctatus; orbitis oculorum, margine pronoti, scutello, maculis 2 parvis in segmento mediali fasciisque abdominis duabus, flavis; alis fumato-hyalinis, anticis fuscis, stigmate ochreo. ♀.
Long. fere 7 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

Antennæ short, stout, yellow beneath, the flagellum thickened towards the apex; the yellow on the flagellum passing into rufous; the third joint nearly one quarter longer than the fourth, the basal joint longer than the third. Head shining, rather densely, but shortly pilose; almost impunctate, the clypeus with a row of punctures on the projecting middle part; front and vertex almost convex, the former slightly hollowed over the antennæ, without furrows or keels; eyes almost parallel; the hinder ocelli

separated by a somewhat greater distance from each other than they are from the eye, and by a greater distance from the eyes than they are from the front ocellus; clypeus transversely convex in the middle, the apex scarcely waved in the centre. Thorax shining, the mesonotum, scutellum, and median segment with scattered, moderately large punctures; mesopleuræ impunctate, rather densely pilose, the keel distinct; the ten keels on the median segment stout, rather widely separated, indistinctly margined; the apex of the median segment with a slight slope, keeled down the centre, and with oblique keels running from the central keel near the end. Abdomen with the apical half acutely pointed; the basal two segments shining, impunctate, almost glabrous; the other segments closely and rather coarsely punctured and pilose; the pygidial area bearing large oblong punctures, closely pressed together at the apex, which is rounded; the sides are margined; ventral segments punctured. Legs stout, pilose, covered with a pale pubescence; the tibial and tarsal spines and the calcaria white; the hind tibiæ tuberculate on the outer side. The second cubital cellule at the top scarcely half the length of the third, and slightly more than the space bounded by the recurrent nervures; the cubitus faint beyond the third cellule.

9. **Gorytes mexicanus.** (Tab. V. figg. 15; 15 *a*, head from in front; 15 *b*, antenna.)

Niger; thorace rugoso-punctato; scapo antennarum, clypeo, scutello, fascias duabus abdominis tarsisque, rufis; alis fere hyalinis, anticis fulvo-fumatis, stigmate et nervis rufo-testaceis. ♀.

Long. $11\frac{1}{2}$ millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Head large, sharply retreating behind the eyes, and nearly as wide as the thorax. Eyes parallel, the lateral ocelli separated from them by a rather greater distance than they are separated from the front ocellus and by a less distance than they are from each other; ocellar region a little raised; clypeus broadly projecting, the base with large punctures, the apical half impunctate, the apex margined, hardly waved in the middle; front and vertex opaque, alutaceous, and with scattered punctures, not depressed, and without furrows or keels except an indistinct furrow below the ocelli; front, vertex, and occiput covered with a brownish pile; immediately below and between the antennæ is a fringe of silvery hair; the clypeus bears long fulvous hair. Antennæ thickened towards the apex; the basal joints of the flagellum greatly elongated; the third joint fully one quarter longer than the fourth. Thorax hardly shining, sparsely pilose; mesonotum and scutellum strongly and coarsely punctured; the mesopleuræ more shining and less strongly punctured, the keel distinct; the area on the median segment triangular, 20-keeled, and margined; the rest of the segment shining, bearing scattered punctures; the middle region irregularly reticulated longitudinally and much more coarsely punctured than the sides; the pleuræ shining, obliquely hollowed in the centre, and sparsely punctured; the extreme apex over the

coxæ coarsely striolated. Abdomen longer than the head and thorax united; the petiole shining, sparsely punctured, nearly as long as, but much narrower than, the second segment, dilated at the apex; the rest of the abdomen opaque, closely, but not coarsely, punctured; pygidial area coarsely longitudinally striolated, except at the extreme apex, which is rounded, shining, and impunctate; ventral segments shining, sparsely punctured. The second and third recurrent nervures roundly elbowed beyond the middle above; cubitus very faint beyond the third cubital cellule.

10. **Gorytes spilopterus.** (Tab. V. fig. 16, ♀.)

Gorytes spilopterus, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 414, t. 1. fig. 18 (wing)[1].

Hab. North America, Nevada [1].—Mexico, Northern Sonora (*Morrison*).

11. **Gorytes lateritius.**

Gorytes lateritius, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 442 [1].

Hab. Mexico, Guanajuato [1].

B. *Eyes converging beneath; median segment smooth, shining, impunctate or nearly so, its base without keels.*

a. *Petiole not narrowed and distinctly separated from the second segment.*

12. **Gorytes rubiginosus.**

Gorytes rubiginosus, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 502 [1].

Hab. Mexico, Cuernavaca (*Bilimek* [1]).

13. **Gorytes venustus.**

Gorytes venustus, Cresson, Proc. Ent. Soc. Phil. iv. p. 472 [1]; Packard, Proc. Ent. Soc. Phil. vi. pp. 423, 425 [2]; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 504 [3].

Hab. North America, Colorado [1 2].—Mexico, Morelia [3].

14. **Gorytes æqualis.**

Gorytes æqualis, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 505 [1].

Hab. Mexico [1].

15. **Gorytes montanus.** (Tab. V. figg. 17, head from in front; 17 *a*, antenna; 17 *b*, *c*, male organ.)

Niger, linea pronoti, scutello, maculis 2 in segmento mediali margineque abdominis segmentis, rufis; alis fere hyalinis, anticis fuscis. ♂.

Long. 8 millim.

Hab. Mexico, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Antennæ inserted opposite the middle of the eyes, and equally distant from the

ocelli and apex of the clypeus, rather long, subclavate; all the joints (but especially the basal one) of the flagellum longer than broad; basal joint thick, shorter than the third; the third joint a little longer than the fourth. Head nearly as wide as the thorax, alutaceous, above covered closely with a fuscous pubescence; the clypeus and cheeks with short silvery hair; eyes converging towards the mouth; a narrow furrow runs down from the ocelli; clypeus broadly but not largely convex, the apex depressed, slightly waved. Thorax: the mesonotum alutaceous; the pleuræ shining, impunctate; mesopleural keel fine, but distinct. Median segment with the area distinct; a wide furrow running down the centre, and from the side of the base a crenulated furrow runs obliquely to the middle, joining the median furrow near its centre; the segment itself has a gradual rounded slope; the metapleura has the furrow deep and covered rather densely with white hair. Abdomen as long as the head and thorax united; the petiole becomes gradually widened from the base to the apex, and is about three fourths of the length of the second segment; the second segment is very gradually and not greatly widened towards the apex, and is very shining, impunctate; the other segments are opaque, very closely covered with a fuscous pubescence. The mesopleural furrow is nearly complete; the tubercles and a small spot behind them are red; the median segment has a small red spot in the centre; the inner orbits of the eyes are red in the middle; the tibiæ are reddish-yellow in front; the basal joint of the middle tarsi is yellow in front; the fore tarsi are obscure red at the apices of the joints; the depression at the front of the scutellum is finely foveolate or rather crenulate; the petiole is broadly black at the apex and along the sides, and has a squarish mark in the centre at the base; the other segments are banded with red; the apical segment black, pilose, impunctate. The second cubital cellule is about half the length of the third at the top, and longer than the space bounded by the recurrent nervures; the costa is obscure testaceous, bounded with black; cubitus faint, but distinct beyond the third cellule.

16. **Gorytes handlirschi.** (Tab. V. figg. 18, head from in front; 18 *a*, antenna.)

Niger; basi clypei, orbitis oculorum infra, margine pronoti, apice scutelli, maculis duabus parvis segmento mediali, tibiis subtus marginibusque abdominis segmentis, flavis; alis fere hyalinis, anticis late fumatis.
Long. 11 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Antennæ subclavate; the third joint a little longer than the first, and nearly one quarter longer than the fourth; joints 3–6 longer than broad, 7–11 broader than long, 4–6 and part of 3 dull rufous beneath. Eyes slightly but distinctly converging towards the clypeus; hinder ocelli separated from each other by a somewhat greater distance than they are from the eyes. Front and vertex slightly convex, shagreened, and bearing scattered, moderately large punctures. Frontal furrow narrow, shallow. Clypeus

broadly convex in the middle; the apex almost transverse, depressed, and with a wide and distinct margin; labrum rounded, and fringed with long golden hair. The inner orbits of the eyes and a broad irregular stripe across the middle of the clypeus are yellow. The front and vertex with short, dull fulvous down and long fuscous hair; the clypeus, cheeks, and labrum with a long silvery, inclining to golden, pubescence. Thorax shining, the mesonotum finely shagreened, shortly pilose; median segment covered with long fuscous hair; pleuræ and sternum with a dull fulvous pubescence; the furrow at the base of the scutellum coarsely foveolate; the edge of the pronotum, the tubercles, a small spot behind them, a line on the hinder edge of the scutellum, and a small mark towards the side of the median segment, yellow; area on the base of the median segment clearly defined; the furrows deep, wide, and indistinctly crenulated; the two oblique furrows on the metapleuræ wide and deep; mesopleural keel distinct. Petiole smooth, impunctate, shining, gradually but not much thickened towards the apex, and clearly defined from the second segment; second segment gradually narrowed from the base to the apex, the extreme apex not being, or scarcely, narrowed, shagreened, opaque; the apex of all the segments bordered with yellow. Legs covered with white pubescence; the tibiæ yellow in front, moderately spinose; fore tarsi with the hairs long but not numerous, the hairs (as well as those on the other tarsi) pale fulvous. The second cubital cellule at the top is less than half the length of the third, and hardly the length of the space bounded by the two recurrent nervures.

The male has the clypeus entirely black; the antennal joints thicker and those at the base of the flagellum shorter, the third joint shorter than the first; the metanotum yellow; the yellow marks on the median segment larger; the cloud in front of the wings lighter in tint.

17. **Gorytes fuscipennis.** (Tab. V. figg. 19, head from in front; 19 *a*, antenna.)

Niger, fulvo-pubescens; scapo apiceque antennarum, labro, clypeo, linea pronoti, tegulis, scutello, maculis 2 in segmento mediali pedibusque, rufis; alis fuscis, stigmate flavo. ♀.

Long. 10 millim.

Hab. MEXICO, Valladolid in Yucatan (*Gaumer*).

Antennæ shorter than the thorax, stout, thickened towards the apex, the third joint a little longer than the fourth, the basal joint distinctly longer than the third. Eyes converging beneath. Head alutaceous, densely covered with fuscous pubescence; the cheeks and clypeus with silvery hair; a fine furrow runs down from the ocelli to the antennæ; clypeus broadly convex, projecting at the apex. Thorax opaque and alutaceous above, densely covered with short fuscous pubescence, the median segment more closely and with a longer golden pubescence at the base; the pleuræ and apex of the median segment more shining, impunctate; the basal part of the middle furrow on the median segment narrow, and interrupted before reaching the wide and deeper oblique

furrows, the apical part of the middle furrow nearly as wide as the oblique furrows; the oblique depression on the metapleuræ shallow, narrow. Petiole shining, impunctate, gradually, but not very much widened towards the apex, the base depressed; the other segments densely covered with fulvous pubescence, opaque. Pygidial area coarsely longitudinally striolated, and bearing stiff silvery pubescence; the apex impunctate, shining, glabrous. The longitudinal furrow on the mesopleuræ wide and deep, and becoming indistinct towards the apex; the oblique furrow obsolete. The depression in front of the scutellum distinctly foveolate. The scape entirely and the flagellum beneath, the head in front below the antennæ, the margin of the pronotum, the tegulæ, the tubercles, the scutellum entirely, the metanotum in the centre, and two large oblong marks on the lateral apex of the median segment, reddish. The petiole is yellow at the base, black in the middle, reddish at the apex; the following three segments at the apex broadly, the apical two entirely, red; the ventral segments are yellowish at the apex, the apical one entirely red. Legs black at the base; the femora broadly black above, the anterior pair at the base only; front tarsi strongly spined; the hind tibiæ with three stout spines laterally and one at the apex. Second cubital cellule much narrowed above, the two nervures being brought very close together owing to the second cubital nervure bending gradually to the first; cubitus distinct, but thin beyond the third cellule.

Allied to *G. phaleratus*, but differing in having the scutellum foveolate at the base.

18. **Gorytes balteatus.** (Tab. V. figg. 20; 20 *a*, head from in front; 20 *b*, antenna.)

Niger; scapo antennarum, margine pronoti, macula mesopleuralis, scutello, metanoto, maculis 2 in segmento mediali tegulisque, flavis; flagello antennarum rufo; pedibus flavis, superne nigro-lineatis; alis flavo-hyalinis. ♀.

Long. 16 millim.

Hab. GUATEMALA, Zapote (*Champion*).

Antennæ stout, the joints slightly dilated on the underside, and each longer than broad, the third and fourth subequal, the basal joint longer than the second and third united. Head narrower than the thorax, opaque; the front, vertex, and occiput densely covered with fulvous pile, the cheeks and clypeus with silvery hair; the labrum sparsely fringed at the apex with long silvery hair; eyes converging beneath; the ocelli in a slight hollow; a narrow shallow furrow runs down from the anterior ocellus to the antennæ; clypeus broadly convex, the apex almost transverse in the middle; the front bears some scattered punctures. Thorax above densely covered with fulvous pubescence, the sides sparsely with pale, and the breast more thickly with a longer silvery pubescence, the sides being much more shining than the rest; mesopleural furrow complete, moderately wide and deep; a narrow furrow runs down from the tegulæ; median segment with a gradual rounded slope, without a basal area, and with a mode-

rately wide shallow central furrow. Petiole as long as the second segment, very shining, widely hollowed in the centre at the base. The other segments are closely punctured and covered with reddish-fulvous hair; the pygidial area at the base in the centre bearing some round punctures, the apex impunctate, the remaining part covered closely with large, deep, elongate punctures and with long golden hair. Ventral segments sparsely punctured, covered with fulvous hair; the apical segment with large scattered punctures, keeled in the middle, and sparsely haired. The following parts are yellow:—The head below the antennæ and the orbits of the eyes above them, the margin of the pronotum, the tegulæ, tubercles, a large mark in the fore region of the mesopleuræ (not reaching to the bottom), and a narrow oblique line at the apex, a line on the mesonotum along the tegulæ, the sides of the median segments, the metanotum, the petiole (except a large black mark in the middle), the basal two segments and the apical one entirely, and the other segments broadly at the apex. Fore tarsi moderately spinose. Cubitus complete.

19. **Gorytes phaleratus.**

Gorytes phaleratus, Say, Bost. Journ. Nat. Hist. i. p. 367; Complete Writings, ii. p. 752; Provanch. Nat. Canad. xiii. p. 69; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 507[1].

Gorytes fulvipennis, Smith, Cat. Hym. Ins. iv. p. 367; Packard, Proc. Ent. Soc. Phil. vi. pp. 423, 426.

Gorytes apicalis, Smith, Cat. Hym. Ins. iv. p. 369.

Gorytes modestus, Cresson, Proc. Ent. Soc. Phil. iv. p. 473; Packard, Proc. Ent. Soc. Phil. vi. p. 423.

Gorytes rufo-luteus, Packard, Proc. Ent. Soc. Phil. vi. pp. 423, 425.

Gorytes flavicornis, Packard, Proc. Ent. Soc. Phil. vi. pp. 424, 429.

Hab. North America, Canada and United States[1], widely distributed.—Mexico, Cuantla[1].

20. **Gorytes notabilis.**

Gorytes notabilis, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvii. p. 520[1].

Hab. Mexico, Cordova[1].

21. **Gorytes alticola.** (Tab. V. figg. 21, head from in front; 21 *a*, antenna.)

Niger; antennis rufis; mesonoto rufo-fulvo; linea pronoti, lineis duabus mesonoti, scutello, lineis duabus in segmento mediali, basi petioli abdominisque segmentis apicibus, flavis; abdominis basi sordide rufo-fulva; alis fusco-fumatis, apice fere hyalinis, stigmate ochraceo. ♂ ♀.

Long. 12 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Antennæ perceptibly thickened from the middle to the apex; the basal joint longer

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than the third, the third and fourth joints subequal, the third to the seventh longer than broad, becoming gradually shorter, the last joint longer than the preceding. Eyes distinctly converging towards the clypeus; the hinder ocelli separated from each other by about the same distance that they are from the front ocellus. Front and vertex sparsely punctured, covered with a golden or fulvous pubescence and with some fuscous hairs; the frontal furrow very fine, almost obsolete. Clypeus convex, margined and waved at the apex, densely covered with silvery pubescence. Thorax impunctate; the mesonotum opaque, covered with a short, close, brownish-fulvous pubescence; pleuræ shining, sparsely pubescent; median segment densely covered with a thick fulvous pile; mesonotal furrow curved, deep; mesopleural furrow almost complete; there is a curved, narrow, semioblique furrow on the metapleuræ, reaching from a little above the middle to the bottom; the furrow running down from the spiracle is of the same width and form, but longer; area on the median segment impunctate and without keels, the central furrow not reaching the base, the lateral furrow shallow, not striolate, running into the apical central furrow. Petiole three-fourths of the length of the second segment, becoming gradually thickened towards the apex; the second segment narrowed at the base, impunctate, clothed with very short pubescence; the third segment at the base glabrous, shining, the rest of it and the other segments densely covered with short fulvous pubescence; pygidial area coarsely longitudinally striolate and sparsely covered with a stiff silvery pile. Antennæ reddish; the basal joint yellow beneath, the apical joint more or less blackish on the lower side. The clypeus, the inner orbits of the eyes to the antennæ, the base of the mandibles, the margin of the pronotum, the tubercles, a spot behind them, a broad line on the mesonotum along the tegulæ, the hinder margin of the scutellum, and two large oblong marks on the median segment, are yellow. Petiole reddish, the sides and apex broadly yellow; the second segment fulvous-red, the apex yellow, the base black; the other segments blackish, obscure yellow at the apex; pygidial area obscure rufous; the ventral segments black at the base, then rufous, then yellow, the rufous running into the yellow. Legs reddish, inclining to yellow; the coxæ, trochanters, the greater part of the femora, and a line on the apical part of the hinder tibiæ, black. Wings smoky, with a violet-fulvous tinge, the apex paler; the costa and stigma rufous; the nervures reddish at the base, fuscous at the apex.

The male differs from the female in having the yellow on the abdomen clearer, and the flagellum of the antennæ for the greater part black above, beneath obscure red; the joints of the flagellum thicker and broadly projecting on the underside, especially the seventh to the twelfth; the apical abdominal segment smooth and impunctate, sparsely pubescent.

In both sexes the mesonotum is sometimes obscured with reddish.

G. fuscipennis is closely allied to *G. alticola*, but is smaller and more slenderly built, the head especially being smaller and not so stout; and also has the frontal

furrow distinct, the clypeus hardly so convex (its colour not yellow, the red extending to the antennæ), the metanotum not black, the furrows on the median segment deeper and the central one complete, the petiole narrower, longer, and more depressed and narrower at the base (the basal part forming a distinct neck clearly separated from the rest), and the abdomen differently coloured. In *G. alticola* the second cubital cellule is fully three-fourths the length of the third, and not narrowed almost to a point as in *G. fuscipennis*.

22. **Gorytes alpestris.** (Tab. V. figg. 22; 22 *a*, head from in front; 22 *b*, antenna; 22 *c*, male organ.)

Long. 10 millim. ♂ ♀.

Hab. MEXICO, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Amongst the specimens of *Gorytes* captured by Mr. Smith at Chilpancingo there are some very similar in general coloration and form to the preceding species, but apparently distinct from it. In these examples, which I have separated under the above name, the clypeus and cheeks want the dense silvery pile of *G. alticola*; the clypeus is black, with a yellow mark in the middle, and is sparsely covered with large punctures and not nearly so convex; the antennæ are more suddenly thickened at the apex, and are red, with the apical four or five joints black, the third joint also being longer in proportion to the fourth and distinctly more elongate than the first; the frontal furrow is narrow but distinct; the apical two furrows on the metapleuræ are deeper and wider (being fully twice the width of those of *G. alticola*); the furrows bounding the basal area of the median segment are wider and crenulated, the central one being wider, deeper, and complete; the petiole has its basal two-thirds black, the black followed by a reddish mark, the apex being broadly yellow; the second segment is black at the base, yellow at the apex, reddish in the middle; the third black at the apex, broadly yellow in the middle; the other segments for the greater part yellow; the apical segment rufous, striolated.

The male differs from the same sex of *G. alticola* in the same points as does the female. The wings are deeper in tint and of a more violet colour than in the female.

The abdomen and median segment are neither punctured nor aciculated; the legs moderately spined. I am almost sure that the suture at the base of the scutellum is foveolate; but as in all the specimens the pin goes through it, I can only see it at the sides.

b. *First abdominal segment petiolate, much longer than broad, clearly separated from the second; eyes converging at the apex; front with a furrow; depression between the scutellum and mesonotum foveolate; median segment without an area, shining, furrowed down the middle; body almost impunctate, covered with a close fulvous pubescence, and usually well marked with yellow spots; wings fulvous, fuscous, or yellowish, without fasciæ.*

23. **Gorytes splendidus.**

Gorytes splendidus, Handl. Sitz. der k. Akad. der Wiss ensch. Wien, xcvii. p. 513[1].

Hab. MEXICO, Huastec[1].

24. **Gorytes centralis.** (Tab. VI. figg. 1, ♀; 1 *a*, head from in front; 1 *b*, antenna.)

Niger; antennis rufis, medio supra nigro; facie, margine pronoti, lineis 2 mesonoti maculisque 4 in segmento mediali, flavis; alis fulvo-hyalinis. ♀.

Long. fere 12 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*), Temax in North Yucatan (*Gaumer*); GUATEMALA, San Gerónimo (*Champion*).

Antennæ reddish, the scape yellow beneath; joints 2–7 of the flagellum black above; the basal joint shorter than the third, which is distinctly longer than the first and second united; the third joint one quarter longer than the fourth. Head narrower than the thorax; above densely covered with golden-fulvous pubescence and sparsely clothed with long fuscous hairs, the clypeus with a silvery pile; front bearing scattered punctures, the furrow well developed; ocelli forming a triangle; the head in front below the antennæ, entirely, and the basal half of the mandibles yellow. Mesonotum with a dense fulvous pile and rather long black hair; marked with fine scattered punctures; the pleuræ very shining, impunctate, sparsely haired; the breast covered with a dense silvery pile. The depression in front of the scutellum foveolate throughout. Median segment with a gradual rounded slope, covered rather closely with long dull fulvous hair; the middle furrow becoming much wider and deeper beyond its junction with the lateral keels, but not reaching the apex. Mesopleural furrow reaching a little beyond the middle, and an oblique curved furrow runs down from the tubercles, but not reaching the longitudinal furrow. Over the hind legs is a short wide furrow with three stout keels. The thorax has the margin of the pronotum, the tegulæ, tubercles, the greater part of the mesopleuræ, the metapleuræ (except a black line at the apex), two broad longitudinal lines on the mesonotum, the scutellum (except a longitudinal line at the base), two small oval oblique marks at the base of the median segment, and two large ones occupying the greater part of either side at the apex, yellow. Petiole as long as the second segment, dilated at the apex; the second segment at the base

not wider than the apex of the petiole, forming a short neck, from which the rest of the segment becomes suddenly dilated. Pygidial area shining, almost glabrous, with scattered punctures along the sides; the apex rounded, impunctate. The petiole bears long fuscous hair; the other segments are densely covered with fulvous pubescence; the petiole and the second segment at the base and apex, the following segments at the apex, the apical one entirely, the first and second segments entirely beneath, and the others at the apex beneath, are yellow; the second segment above is not much less than one half the length of the third above. Legs yellow, the femora, tibiæ, and the base of the tarsi lined with black above; anterior tarsi sparsely and strongly spined. Wings hyaline, with a fulvous tinge, the stigma pale yellow; cubitus complete.

From the preceding species, *G. centralis* may be readily known by the shining, almost impunctate pygidial area; the third joint of the antennæ longer than the first (one quarter longer than the fourth), the median segment with four yellow marks, &c. *G. splendidus* agrees with *G. centralis* in the form of the pygidial area; but it has the "fühlerschaft merklich grösser als das dritte Glied."

MELLINUS.

Mellinus, Fabricius, Ent. Syst. ii. p. 285 (1793); Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, xcvi. p. 53.

A genus of small extent (only eight species have been described), but of wide distribution, being found in the Palæarctic, Oriental, Nearctic, and Neotropical regions. The common European species (*M. arvensis*) stores its nest with Diptera.

1. **Mellinus pygmæus.** (Tab. V. fig. 5.)

Mellinus pygmæus, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcvi. p. 71[1].

Hab. Mexico, Orizaba (*Bilimek*[1], *H. H. Smith*, and *F. D. G.*).—Brazil.

2. **Mellinus alpestris.** (Tab. V. fig. 6.)

Niger, nitidus; capite et thorace aciculatis; clypeo, scapo, lineis pronoti, scutello, macula metanoti, maculis abdominis, tibiis tarsisque anticis, flavis; alis fere hyalinis, nervis nigris. ♀.

Long. 7 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Head and thorax clothed with short pubescence; eyes parallel; ocelli hardly forming a triangle, and the hinder ocelli separated from the eyes by about the length of the fourth antennal joint and by a somewhat greater distance from each other; clypeus broadly rounded at the apex, the middle with three short broad teeth; the clypeus entirely, the base of the mandibles, and the inner orbits of the eyes narrowly, yellow. Two closely situated lines on the pronotum, the tubercles, the tegulæ in part, a squarish mark on the scutellum, a smaller one on the metanotum, and an elongated

mark on the side of the basal area of the median segment, are yellow. Median segment aciculated, very finely and coarsely punctured; the basal area raised, a little longer than broad, rounded at the apex; the apex of the segment with a gradual slope, the centre depressed at the base. Abdomen shining, impunctate, the apical segments covered with short whitish hair. Pygidial area coarsely aciculated, depressed before the apex, which is about one fourth of the width of the base; the sides straight. Petiole not curved on the lower side, dilated at the apex, a little longer than the second segment; the basal half of the petiole, a somewhat oval spot on the sides of the second segment, a longer pair on the third, and a stripe on the apex of the penultimate segment, yellow. The anterior knees, tibiæ, and tarsi in front, and all the spurs, are yellow. The first transverse cubital nervure is bent backwards in the middle, thus forming an angle there, the second straight and oblique, the third bent above the middle. The third antennal joint is hardly one quarter longer than the fourth.

PHILANTHOCEPHALUS, gen. nov.

Eyes emarginated at the top on the inner side, reaching to the base of the mandibles. Wings with four cubital nervures, the second and third receiving each a recurrent nervure; radial cellule elongate, acute at the apex; second and third cubital cellules broad at the top, especially the second; anal nervure in the hind wings interstitial, or received a little beyond the cubital. Stigma elongated, narrow. Abdomen petiolate, the petiole at least two thirds the length of the other segments united; furrowed laterally, dilated at the apex. Spurs on the hind tibiæ not flattened, the inner one not dilated. Middle tibiæ with two spurs. Head usually broader than the thorax; occiput margined. Pygidial area flat, not differing from the penultimate segment, the sides not margined, the apex rounded.

The affinities of *Philanthocephalus* are, it seems to me, with *Mellinus*, although it differs widely from that genus in many respects. The head is differently shaped, having quite a *Philanthus*-look, not only from the general form of the head itself, but from the incised eyes; in the alar neuration, again, it varies from *Mellinus* in the first recurrent nervure being received in the second (not in the first) cubital cellule. From the Mimesidæ it may be known by the incised eyes and by the two spurs to the middle tibiæ; in its general form, however, *Philanthocephalus* more nearly resembles *Mellinus* than *Mimesa*.

The maxillary palpi are six-, the labial palpi four-jointed, and the form of the trophi does not differ materially from that of *Gorytes* or *Mellinus*. In the male genital armature there is no essential divergence from these two genera.

Synopsis of the Species.

1 (6). Head and median segment punctured.

2 (3). Head rugosely punctured, entirely black; the thorax and apex of the median segment, the abdomen only on the second segment, marked with yellow . . . . . *hirticeps*.

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3 (2). Head finely punctured; apical segments of the abdomen yellow.
4 (5). Length at least 10 millim. (♂); clypeus yellow; anterior tibiæ and tarsi only yellow in front . . . . . *mexicanus.*
5 (4). Length 8 millim.; clypeus black; anterior tibiæ and tarsi entirely yellow . . . . . *punctifrons.*
6 (1). Head and median segment impunctate.
7 (8). Pubescence on face silvery; legs for the greater part black; the second abdominal segment only yellow; wings smoky . . . . *maculiceps.*
8 (7). Pubescence on face golden; legs for the greater part yellow; the abdominal segments margined with yellow; wings hyaline . . . *gracilis.*

A. *Hind wings with the anal nervure interstitial.* (Species 1–3.)

1. **Philanthocephalus hirticeps.** (Tab. VI. figg. 2 ♂; 2 *a*, head from in front; 2 *b*, male organ.)

Niger, longe hirtus, facie aureo-pilosa; capite rugoso-punctato; segmento mediali leviter punctato; maculis pronoti et apice segmento mediali flavis; antennis longis; alis fumato-hyalinis. ♂.
Long. 13 millim.

Hab. Mexico, Atoyac in Vera Cruz (*Schumann*).

Head densely covered with long fuscous hair, especially at the sides behind, the clypeus and cheeks with golden hair, rugosely punctured. Clypeus yellow, rounded, not projecting in the middle, finely and sparsely punctured. Furrow from the ocelli broad and deep, narrowed towards the apex. Antennæ more than twice the length of the thorax, not perceptibly thickened towards the apex; the third joint not quite twice the length of the fourth. Thorax covered with long fuscous hair; the mesonotum and the apex of the median segment sparsely punctured; the mesonotal furrows deep and wide; the fovea on the median segment twice as long as broad, acute at the base and apex, deep; the apical furrow wide and deep. Petiole as long as the second, third, and fourth abdominal segments united, the segments impunctate; the petiole sparsely, the other segments more thickly, covered with long pale hairs; the third and following ventral segments broadly clothed at the apex with a silvery pile, and the third, fourth, and fifth laterally with long tufted black hair, the apical segment sparsely clothed with pale hairs; the second segment has a yellow line on either side above. The anterior tibiæ and tarsi are yellow in front; the basal and third joints of the hinder tarsi are dilated gradually from the base and apex on the underside. The second cubital cellule is not much shorter than the third.

A distinct species, easily known by the longish antennæ, the rugose head, the golden pubescence on the face, the dilated first and third hinder tarsal joints, and the lateral tufts of hair on the abdominal segments.

2. Philanthocephalus maculiceps. (Tab. VI. figg. 3, head from in front, ♂; 3 *a*, male organ.)

Niger, lævis, capite et thorace flavo-maculatis; segmento mediali lævo; apice abdominis segmento 2° flavo tibiis tarsisque anticis flavis; alis fere hyalinis, nervis fuscis, stigmate testaceo. ♀ ♂.

Long. 12–15 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

Head shining, almost impunctate, sparsely pilose; the cheeks and clypeus with silvery hair. Clypeus convex, projecting a little at the apex; the middle forming a semicircular projection, which is larger than the lateral pieces and is margined. The furrow from the ocelli is broad and deep nearly halfway to the antennæ, then very narrow and shallow, becoming wider and deeper towards the apex. The inner orbits of the eyes, the edge of the clypeus, the base of the mandibles, two marks behind the ocelli and two others lower down touching the occiput, are pale yellow. Antennæ stout, becoming gradually thicker from the third joint, which is twice the length of the fourth; the middle joints nearly as long as broad. Thorax shining, impunctate, sparsely pilose; the furrows on the mesonotum shallow; the fovea at the base of the median segment longer than broad, almost oval; the apex of the median segment oblique, deeply and widely furrowed; the pronotum, one, two, or three marks on the scutellum, the metanotum, two large marks on the median segment, the tegulæ, and tubercles, yellow. Abdomen shining, impunctate; the petiole as long as the second and third segments united; the pygidial area almost impunctate, depressed before the apex; two marks on the apex of the petiole, a moderately broad line on the apex of the second segment, and a much narrower and more indistinct one on the third and fourth, yellow. Legs and wings almost as in *P. hirticeps*.

In the male the antennæ are longer and somewhat more slender, and entirely rufous beneath; the clypeus and orbits are broadly yellow and densely covered with long silvery hair; the marks on the vertex are absent, or very much reduced; the scutellum is not marked with yellow; there are no marks on the petiole; and the belts on the abdominal segments are much reduced in size, if not absent.

A smaller species than *P. mexicanus*, and differing from it by the impunctate head, the wide and deep furrow below the ocelli, the more projecting, rounder, and wider apex of the clypeus, which is separated from the lateral pieces by a deep incision, the impunctate median segment and pygidial area, &c.

3. Philanthocephalus gracilis. (Tab. VI. figg. 4, ♂; 4 *a*, head from in front; 4 *b*, male organ.)

Niger, lævis; facie, abdominis segmentis marginibus pedibusque flavis; alis hyalinis, nervis fuscis, costa stigmateque sordide testacis. ♀ ♂.

Long. 10–11 millim.

Hab. MEXICO, Presidio (*Forrer*), Rio Papagaio 1200 feet, Chilpancingo 4600 feet, both in Guerrero (*H. H. Smith*).

Head shining, almost impunctate, covered with long fuscous, the face with golden, hair. Vertical furrow wide and deep, of nearly equal width throughout. Clypeus convex, rounded at the apex. Below the antennæ (including the mandibles) the head is entirely clear yellow; the scape is yellow beneath; the flagellum broadly fulvous. Antennæ stout, not attenuated towards the apex; the third joint one quarter longer than the fourth. Thorax shining, sparsely punctured; the fovea on the median segment elongate, twice as long as broad; the apical furrow wide, deep; a line on the pronotum, the tubercles, a mark behind them, the tegulæ, four marks on the scutellum, the metanotum, and two large marks on the median segment, clear yellow. Petiole nearly as long as the second, third, and fourth abdominal segments united; a mark on either side of the petiole at the apex, the second segment somewhat broadly at the apex, and the other segments more narrowly, yellow. Pygidial area with some scattered punctures. The anterior coxæ and trochanters, the middle coxæ and trochanters narrowly beneath, the femora, tibiæ, and tarsi, clear yellow; the anterior and middle femora at the base above, the posterior femora above and entirely at the base, the posterior tibiæ behind, and the apices of the tarsal joints, black.

B. *Hind wings with the anal nervure received beyond the posterior transverse nervure.*

(Species 4 & 5.)

4. **Philanthocephalus mexicanus.** (Tab. VI. figg. 5, head from in front, 5 *a*, trophi, ♂; 5 *b*, male organ; 6, ♀ *.)

Niger, thorace flavo-maculato; fronte leviter rugosa; vertice punctato; apice segmento mediali punctato; abdominis apice flavo aut fulvo; alis fusco-hyalinis. ♀ ♂.

Long. ♀ 14–17, ♂ 10–12 millim.

Hab. MEXICO, Tierra Colorada 2000 feet, Rincon 2800 feet, Rio Papagaio 1200 feet, Chilpancingo 4600 feet, all in Guerrero (*H. H. Smith*), San Blas in Jalisco, Atoyac in Vera Cruz (*Schumann*), Temax in North Yucatan (*Gaumer*).

Hinder ocelli separated from the eyes by a space equalling the length of the third antennal joint, and from each other by the length of the fourth. Clypeus roundly projecting, but not semicircular at the apex, being there too sharp. The vertex is sparsely and finely punctured; the front is more opaque and closely striolated; the clypeus is finely punctured. The apical ocellus is in a pit, and a fine furrow runs down from it, ending in an oblong fovea between the antennæ. The vertex has a plumbeous hue; the clypeus is yellow, the yellow being prolonged above in the middle to near the base of the antennæ, the prolongation being sharply rounded. The mandibles are striolated, yellow, and finely punctured at the base. The palpi are testaceous. The mesonotum has a plumbeous hue, and is shining, sparsely and finely punctured; the pleuræ are still more closely, and the median segment (except at the base, which is

* By an oversight, the numbers at the bottom of the Plate are given as 5, 5 *a*, *b* ♀: they should be 5, 5 *a*, *b* ♂, 6 ♀.

impunctate) very closely punctured. There is a wide central and two somewhat narrower furrows on the mesonotum, and a much finer furrow runs outside these; at the extreme base of the median segment is a fine furrow terminating in a large, deep, pear-shaped fovea (widest at the base), which does not reach to the punctured part of the segment. The pronotum, tegulæ, tubercles, metanotum, a spot on either side of the scutellum, and two large spots on the sides of the median segment are yellow. Petiole a little longer than the second and third abdominal segments united, furrowed laterally, and dilated at the apex; the petiole and the second segment are almost impunctate; the other segments are finely punctured, the punctuation becoming closer and stronger towards the apex. Pygidial area closely punctured; the apex rounded, slightly incised. A mark on either side of the apex of the petiole, one on the sides of the second segment, extending all round beneath, and a line on the apex of the fourth segment, yellow; the apical segments more or less dull rufous. Tibiæ stoutly spined; the tarsi (particularly the anterior pair) bearing long bristles. The anterior and middle tibiæ are yellow in front, as are also the anterior tarsi; the posterior tarsi have joints 2–4 broadly whitish, yellow at the base. Antennæ stout, thick from the fourth joint, not much attenuated towards the apex, the apical joint longer than broad, the second joint broader than long; the third joint nearly twice the length of the fourth; the basal and apical joints are more or less rufous beneath. The second recurrent nervure is almost interstitial; the third transverse cubital nervure is curved at the base. The pubescence all over the body is short and sparse; the vertex and mesonotum are almost glabrous.

The male has the head covered with long fuscous hair, which becomes silvery on the face and clypeus; the punctuation on the vertex much stronger and closer, and the striation on the front also stronger; the clypeus convex in the middle, and projecting gradually at the apex; the pubescence on the thorax stronger; and the antennæ longer and becoming gradually stouter from the third joint. It sometimes has three yellow marks on the scutellum, and the abdominal segments 4–6 banded with yellow at the apex.

A variable species in coloration. In some specimens the clypeus is almost black; the scutellum wants the yellow spots; the yellow on the metanotum is narrow or entirely absent; the marks on the median segment are attenuated; and the apical three or four segments are entirely rufous. The same remarks apply to the male.

5. **Philanthocephalus punctifrons.** (Tab. VI. figg. 7, head from in front, ♂; 7 *a*, male organ.)

Niger, facie argenteo-pilosa; capite et segmento mediali punctatis; abdominis segmentis 2° et 4°–6^m^ flavo-balteatis; tibiis tarsisque anterioribus flavis; alis fere hyalinis. ♂.

Long. 8 millim.

Hab. PANAMA, Bugaba (*Champion*).

Vertex and front covered with long fuscous, the face with silvery, hair; the vertex

sparsely and finely, the front rather strongly and closely, punctured; vertical furrow thin, short, not reaching more than halfway between the antennæ and ocelli; inner orbits of the eyes yellow. Thorax finely, the median segment more strongly, punctured; stoutly and closely pubescent; basal fovea of median segment pear-shaped, deep; apex of the median segment oblique, moderately deeply furrowed; a line on the pronotum, the tubercles, a spot behind them, the tegulæ, the greater part of the scutellum, the metanotum, and two large, longish marks on the median segment, yellow. Abdomen with two marks on the apex of the petiole, a large band on the second segment, and one on the fourth and following segments (including the pygidial area), yellow; ventral segments densely covered with fuscous hair. The anterior and middle knees and tibiæ, and all the tarsi, yellow, the tarsal joints black at the apex. The second recurrent nervure is almost interstitial.

Fam. BEMBICIDÆ.

SPHECIUS.

Sphecius, Dahlbom, Hymen. Europ. i. p. 154 (1843); Patton, Bull. U.S. Geol. & Geogr. Surv. v. p. 34 (1880).

Hogardia, Lepeletier de Saint-Fargeau, Hist. Nat. des Ins., Hymén. iii. p. 288 (1845).

Stizus, Smith, Cat. Hym. Ins. iv. p. 336 (nec Latreille); Packard, Proc. Ent. Soc. Phil. vi. p. 441; Taschenberg, Zeitschr. f. d. ges. Naturw. Sachs. Thür. xlv. p. 359.

1. **Sphecius speciosus.** (Tab. VI. fig. 8, ♀.)

Sphex speciosus, Drury, Exot. Ins. ii. p. 71, t. 38. fig. 1 (♀).

Stizus speciosus, Lep. de Saint-Farg. & Serv. Encycl. Méthod. x. p. 496, t. 382. fig. 6 (♀); Westw. ed. Drury's Exot. Ins. ii. p. 77, t. 38. fig. 1 (♀); Blanch. Dict. Univ. d'Hist. Nat., Atlas, ii. Hymén. t. 2. figg. 3 (♂), 7 (♀); Smith, Cat. Hym. Ins. iv. p. 336; Packard, Proc. Ent. Soc. Phil. vi. p. 442 (♀); Walsh, Am. Ent. i. p. 129, fig. 103, & ii. p. 87, fig. 57 (♂).

Hogardia speciosa, Lep. de Saint-Farg. Hist. Nat. des Ins., Hymén. iii. p. 290.

Sphecius speciosus, Dahlb. Hymen. Europ. i. p. 154 (♀); Patton, Bull. U.S. Geol. & Geogr. Surv. v. p. 342[1].

? *Sphecius speciosus,* var. *convallis,* Patton, Bull. U.S. Geol. & Geogr. Surv. v. p. 343.

Vespa tricincta, Fabr. Ent. Syst. ii. p. 254; Syst. Piez. p. 254.

? *Stizus grandis,* Say, West. Quart. Rep. ii. p. 77; Am. Ent. p. 3, t. 2. figg. 1 (♀), 2 (♂); Complete Writings, i. pp. 3, 165, t. 2. figg. 1 (♀), 2 (♂); Packard, Proc. Ent. Soc. Phil. vi. p. 442 (♀); Riley, First Ann. Rep. Ins. Missouri, p. 27, fig. 12 (♀) (1869); Walsh, Am. Ent. i. p. 8, fig. 3, & p. 129, fig. 102 (♀).

? *Stizus fervidus,* Cresson, Trans. Am. Ent. Soc. iv. p. 223 (♀).

Hab. North America, from Connecticut southwards.—Guatemala, Panzos in Vera Paz (*Champion*); Honduras, Ruatan Island (*Gaumer*).

It is a questionable point as to whether *S. grandis*, *S. fervidus*, *S. speciosus*, var. *convallis*, *S. raptor*, Handl., and *S. hogardii* are distinct species, or only varieties of *S. speciosus*. Patton was inclined to regard them as forms of *S. speciosus*, but Hand-

lirsch treats them as good species. *S. hogardii* is distinguished (teste Handlirsch) by the abdomen wanting the yellow markings; *S. raptor*, *S. spectabilis*, and *S. speciosus* have yellow marks only on the first two or three segments, *S. raptor* having the body red, the two others having it black; *S. spectabilis* has only the first and second segments marked with yellow and the wings "vix lutescentes," and *S. speciosus* has the third segment marked with yellow, and the wings "valde lutescentes." *S. grandis* and *S. fervidus* (having the five segments marked with yellow) are separated *inter se* by the former having the wings "valde infumatæ," as opposed to the wings "parvum infumatæ, in area radiali obscuriores" of *S. fervidus*. The specimens from our region have the pro- and mesonotum rufous; those from Guatemala have the basal two, the one from Honduras the basal three, segments marked with yellow; the latter has, if anything, the wings rather lighter in tint, although in all the rufo-fulvous tinge is conspicuous. The amount of red on the thorax and of yellow on the abdomen is not alike in any of the specimens.

This insect preys on *Cicadæ*. Patton [1] thus remarks on its habits: "I have observed this wasp dragging its prey, the *Cicada pruinosa*, Say. The *Cicada*, paralysed by the sting of the wasp, was placed upon its back with the wings folded. The wasp, standing over it, caught hold of the bases of the wings with the claws of her intermediate tarsi, and, walking upon her anterior and the tips of her posterior tarsi, dragged the *Cicada* head foremost over the ground, the intermediate tarsi of the wasp extending from the bases of the wings to the eyes of the *Cicada*. Proceeding in this manner, and with an occasional flutter of the wings if harassed, she ascended a small evergreen tree, probably to attain an elevation from which to take flight, and was there lost to view."

STENIOLIA.

Steniolia, Say, Bost. Journ. Nat. Hist. i. p. 367 (1837); Complete Writings, ii. p. 751; Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 504.

This genus agrees with *Monedula* in the front ocellus not being linear and transversely curved as is the case with *Bembex* and *Bembidula*; but the maxillary palpi have only three joints and the labial palpi only one joint; the anterior ocellus is elliptical; and the maxillæ are elongate, reaching, when pressed, nearly or quite to the hind coxæ. Like *Monedula*, *Steniolia* is confined to the Neotropical and Nearctic Regions.

1. **Steniolia longirostra.** (*Steniola longirostra*, Tab. VI. figg. 9, male organ; 10, ♀.)

Bembex longirostra, Say, Bost. Journ. Nat. Hist. i. p. 366[1]; Complete Writings, ii. p. 751.
Steniolia longirostra, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 508[2].
Monedula montezuma, Smith, Cat. Hym. Ins. iv. p. 334[3].

Hab. MEXICO[1 2 3], Northern Sonora (*Morrison*), Venta de Zopilote in Guerrero 2800 feet, Cuernavaca (*H. H. Smith*); GUATEMALA, Panajachel 5000 feet, San Gerónimo 3000 feet (*Champion*).

Antennæ black above, the basal three joints pale yellow and the other joints fulvous beneath ; the third joint one quarter longer than the fourth. Front and vertex densely covered with long brownish, the face, labrum, and clypeus much more sparsely with white, hairs, and bearing scattered punctures. The mandibles, labrum, clypeus, and orbits broadly in front, narrowly behind, a conical mark on either side of the anterior ocellus uniting in front, and a narrow line on the vertex behind, pale lemon-yellow ; the marks on the front with an orange tinge ; the maxillæ brownish. Thorax above bearing a dense brownish pubescence ; the sides and sternum with longer pale cinereous hair. Prothorax yellow, black in front, and with a large triangular mark laterally ; two short lines on the mesonotum in front of the middle, a line extending along the sides from the front of the tegulæ to the scutellum, a short line in front of the scutellum, a conical mark on either side of the scutellum, the postscutellum, two oblique lines (becoming gradually wider towards the apex) on either side of the metanotum in front and almost uniting, yellow, with an orange tinge ; mesothorax laterally and beneath yellow, the sutures, an oblique line below the hind wings, and a large oval mark on the sternum, black ; metapleuræ black ; a small mark below the wings and a larger and more irregularly shaped one lower down, yellow. Thorax closely and rugosely punctured ; the sides punctured, the punctures large and clearly separated ; the mesonotum depressed in the centre. Abdomen shining, the base aciculated ; the apical segment covered with large punctures ; the base bearing fuscous hairs. Basal segment black, a large oblique mark on either side, and two marks in the centre at the apex, yellow ; the second segment similarly marked, but with the lateral marks much larger and the central ones longer and transverse, not oblique ; the third and fourth segments bear lines which are brown at the basal half, and become narrowed towards their apices, which are turned up, the two lines being almost united ; a similarly shaped line is on either side of the fifth segment, the two lines being completely united ; the last segment is yellow, with a black line down the centre, and bears a few black bristles at the base, beneath it is yellow, with an interrupted black line down the middle. Legs yellow, the hind tibiæ and tarsi almost white, and covered with a white pile ; the femora lined with black above, and with a distinct brownish-red tinge.

Length 15–17 millim.

In the male the two or three basal joints of the antennæ only are yellow beneath, the others being entirely black ; the marks at the ocelli are very small ; the vertex is entirely black, wanting the yellow line ; there are two small black marks on the clypeus ; the prothorax is black, lined with pale yellow at the edges ; the mesonotum is generally without yellow marks ; the lateral marks on the scutellum are small ; there is only a small yellow mark on either side of the metanotum ; and the pleuræ are entirely black, except the tubercles. The basal segment of the abdomen has an oblique line at the base and two pear-shaped transverse marks in the middle ; the second and third segments have oblique lateral lines, and two central marks which are broader than long and truncated at the ends ; the lateral marks on the other segments are

transverse, like the central ones, and nearly in a line with them; the penultimate segment has one continuous line; and the last segment has a black line down the centre. The basal ventral segment has a large black band at the base, from which proceeds a broad black longitudinal line to the apex (in some examples the entire segment is black), the other segments being edged with black.

In some examples of the female the ventral segments are almost without black; others have a longitudinal black line on the basal segment and a more or less long black transverse one on the others.

A very variable species, especially in the colour of the abdomen in the male. I have examined the type of *Monedula montezuma*, Smith.

2. **Steniolia scolopacea.** (*Steniola scolopacea*, Tab. VI. figg. 11, ♂; 11 *a*, male organ; 11 *b* & 11 *c*, terminal ventral segment, ♂.)

Steniolia scolopacea, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 510[1].

Hab. North America, Nevada, California [1].—Mexico, Northern Sonora (*Morrison*), Jaral near Guanajuato (*Schumann*).

Antennæ with the basal joints pale yellow, the apical ones dull fulvous, beneath; the third joint one quarter longer than the fourth. Head black, covered with long cinereous hair on the front and vertex, the hair on the face white; obscurely punctured; the orbits narrowly above (except at the extreme top), broadly beneath, a mark surrounding the anterior ocellus (dilated laterally), the clypeus, labrum, mandibles (except at the apex), and palpi, clear pale yellow; the maxillæ honey-yellow. Thorax covered with long cinereous or whitish hair. Prothorax clear pale yellow, an irregular black line on the edge of the pronotum; mesonotum black, closely punctured, two short marks in front, a line along the tegulæ, a brown mark before the scutellum, a large mark on either side of the scutellum, and the postscutellum, yellow; mesopleuræ and sternum black, a large mark on the former in front and the centre of the latter yellow; metanotum black, a curved line (dilated laterally at the apex), and the metapleuræ (except the edges and a small black mark above), clear yellow. Abdomen yellow, the segments black at the base and apex, the black united by a longitudinal black line on the first, second, and third segments; on the second segment a black line runs from near the base of the central line, the former bending down and uniting with the apical line, thus enclosing two large yellow spaces; the lines on the other segments project laterally and in the middle; apical segment waved in the centre, bare, impunctate; ventral segments black at the edges, the black not continuous on the basal segments and projecting in the centre on the second, fourth, and fifth.

The Sonoran example quite agrees with the description of Handlirsch. *S. scolopacea* may be distinguished from *S. longirostra* by the more distinct sculpture; and by the femora being yellow lined with black, never reddish as in *S. longirostra*. I believe that *S. scolopacea* is a good species.

BEMBIDULA.

Bembidula, Burmeister, Bol. Acad. Cordova, i. p. 122 (1874); Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 474.

In the number of joints in the maxillary and labial palpi, this genus agrees with *Monedula*; but it differs from it in the anterior ocellus being linear and transversely curved, not roundish or reniform. The metathorax is compressed at the sides and excavated behind; the radial nervure forms with the third transverse cubital nervure an acute angle; and the eighth ventral segment in the male has three spines. The genus is only known from North, Central, and South America.

1. **Bembidula diodonta.**

Bembidula diodonta, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 485, t. 2. figg. 4, 16[1].

Hab. Mexico, Orizaba [1].

2. **Bembidula discisa.** (Tab. VI. figg. 12, ♀; 13, male organ.)

Monedula discisa, Taschenb. Zeitschr. f. d. ges. Naturw. Sachs. Thür. xxxvi. p. 26[1].

Bembidula discisa, Burm. Bol. Acad. Cordova, i. p. 124[2]; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 485, t. 2. figg. 10, 13, 17[3].

Hab. Mexico, Orizaba (*Bilimek*[4]), Cordova (*Saussure*[4]), Valladolid in Yucatan (*Gaumer*); Guatemala, Senahu in Vera Paz, Paraiso 300 feet (*Champion*); Panama, Volcan de Chiriqui 2000 to 3000 feet, David (*Champion*).—South America, Rio Janeiro [1], Rio Grande do Sul, Parana [1 2], Cordova [2].

Antennæ black, the scape yellow beneath; the flagellum with a microscopic pile; the third joint twice the length of the fourth. Head closely punctured; the front and vertex covered with moderately thick and long cinereous or fuscous hair; the face and clypeus with a whitish pubescence; the orbits broadly in front, narrowly behind, the clypeus (except a large irregular transverse mark at the base and a small one in front of this), the labrum, the mandibles (except the tips), and a short narrow line on the vertex touching the orbits, yellow. Thorax shining, closely and rather strongly and evenly punctured. Prothorax black, yellow at the top; two oval spots in front on the mesonotum, a line before and one behind the tegulæ, a small mark on either side of the scutellum, the postscutellum, a curved line along the edge of the metanotum, the projecting angles of the latter broadly, and a large mark on the mesopleuræ, yellow. There is an interrupted yellow line on the abdominal segments, the lines forming this becoming shorter and more widely separated towards the apex, that on the penultimate segment being twice as broad as long; on the last segment are two small marks. Last segment bearing large punctures, rugose at the base. The basal ventral segment is almost entirely black; the others bear black, transverse bands; the last ventral segment is entirely black. Legs yellow, the anterior coxæ yellow beneath, the four hinder coxæ yellow at the apex; the femora broadly lined above and beneath with black.

A variable and widely-distributed species. Examples of it in the British-Museum collection are labelled *Monedula spinosa*, Fabr.

3. **Bembidula variegata.** (Tab. VI. fig. 14, ♀.)

Bembex variegata, Oliv. Encycl. Méthod. iv. p. 292 [1].
Bembidula variegata, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 488 [2].
Monedula dissecta, Dahlb. Hymen. Europ. i. p. 186.
Monedula sericea, Spinola, in Gay's Hist. fis. y polit. de Chile, Zool. vi. p. 315 [3].

Hab. MEXICO, Orizaba (*Bilimek* [2]), Omealca near Orizaba (*M. Trujillo*), Teapa in Tabasco (*H. H. Smith*); GUATEMALA, San Joaquin in Vera Paz (*Champion*).—SOUTH AMERICA, Venezuela [2], Cayenne [1], Brazil [2], Chili [3].

Antennæ with the scape yellow beneath; the flagellum densely covered with a short, silky, microscopic pile; the third joint twice the length of the fourth. Head finely punctured; the front, vertex, and occiput covered with short pale hair; the clypeus with a silky pile; the orbits broadly in front to the ocelli and narrowly behind, the space between the antennæ, the clypeus (except a somewhat triangular black mark at the base), the labrum, and the mandibles (except the apices), clear pale yellow. Thorax shining, minutely punctured; the prothorax yellow, with a broad black band above; two longish longitudinal lines on the mesonotum in front, a line along the sides extending from the pronotum to the scutellum, a line along the base of the scutellum, the postscutellum, a curved line along the apex of the metanotum, the metanotal tubercles broadly, a broad line down the centre of the mesopleuræ, a small mark beneath the fore wings, and the metapleuræ (except a black line down the centre), pure citron-yellow. Abdomen shining, with a broad interrupted yellow band on each segment and two marks on the apical segment; a broad black mark on the ventral segments; the apical ventral segment entirely black, sparsely punctured, and shining. Legs clear yellow; the greater part of the trochanters, and a line on the femora and tibiæ above, black.

4. **Bembidula viduata.**

Bembidula viduata, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 491 [1].

Hab. MEXICO, Huastec [1].

5. **Bembidula capnoptera.**

Bembidula capnoptera, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 497 [1].

Hab. NORTH AMERICA, Texas, Kentucky, Georgia.—MEXICO, Jalisco (*Schumann*).

6. **Bembidula burmeisteri.** (Tab. VI. figg. 15, ♀; 15 *a*, apex of abdomen, ♀; 16, male organ; 16 *a*, apical ventral segment, ♂; 16 *b*, apex of abdomen, ♂.)

Bembidula burmeisteri, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcviii. p. 497 [1].

Coxis posticis in utroque sexu infra in spinam productis; abdominis segmentis 2°–4ᵐ late flavis, sexto rufo-flavo. ♂ ♀.
Long. 12–16 millim.

Hab. MEXICO [1], Navarrete in Tepic (*Schumann*), Venta de Zopilote 2800 feet, Rio Papagaio 1200 feet, both in Guerrero (*H. H. Smith*), Temax in North Yucatan (*Gaumer*).

Black; the inner and outer orbits of the eyes (the former broadly), the clypeus, the scape beneath, the mandibles at the base, the edges of the labium, the femora more or less, the tibiæ, the tegulæ and tubercles, citron-yellow; the edges of the pronotum, a more or less large mark on either side of the scutellum, the metanotum, the edge of the median segment at the top, the lateral projections, sometimes an irregular narrow curved line on the first segment, and the other segments, except a narrow black line at the base (the apical one entirely, except at the extreme apex), yellow. The four anterior femora are yellow beneath to near the base as well as at the apex, the hind femora being yellow at the apex only; the tarsi are yellow, with a decided rufous tinge. Head above covered with long grey hair; the vertex broadly depressed laterally, opaque, strongly aciculate; clypeus convex, the apex almost transverse. Pro- and mesothorax (especially above) finely and rather closely punctured. Last ventral segment indistinctly carinate, laterally with some scattered punctures, the apex sharply rounded; beneath keeled in the centre, the sides a little depressed. Hind coxæ with a sharp triangular tooth on the inner side.

In the male the hind coxæ are toothed as in the female; the yellow marks on the scutellum and metanotum are much reduced; the curved line on the median segment is absent; the abdominal segments 2–6 are broadly black at the base; the last segment is black, with two small yellow marks, punctured at the base, the apex almost impunctate; the second ventral segment has an elongate tubercle; the antennal joints are cylindrical, somewhat dilated beneath; and the anterior tarsi are not dilated.

A variable species. In some examples the yellow marks on the scutellum and median segment, and also the yellow band on the first abdominal segment, are obliterated; the yellow band on the other segments is much narrowed; and the tibiæ are more or less lined with black behind.

I was somewhat in doubt as to our Mexican specimens being really *B. burmeisteri*; because Handlirsch states that his species agrees with *B. fodiens* in the form of the sixth dorsal plate (that of *B. fodiens* being figured by him), while it is very different in our examples. However, Herr Handlirsch has kindly informed me that they are undoubtedly referable to *B. burmeisteri*.

MONEDULA.

Bembex, pt., Fabricius, Ent. Syst. ii. p. 247 (1776).
Stictia, Illiger, in Rossi's Fauna Etrusca, 2nd edit. ii. p. 131 (1807).

Pl. 88

Monedula, Latreille, Gen. Crust. et Ins. iv. p. 99; Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, 1887, p. 281.

A well-known genus, confined to the Nearctic and Neotropical regions. It has the maxillary palpi six- and the labial palpi four-jointed; the anterior ocellus reniform or roundish; and the maxillæ short, not reaching near to the posterior legs.

1. **Monedula heros.** (Tab. VI. fig. 21.)

Bembex heros, Fabr. Syst. Piez. p. 222 [1].
Monedula heros, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcix. p. 108 [2].

Nigra, argenteo-pilosa, labro (medio nigro) maculisque 10 abdominis albidis; alis hyalinis, fere fusco-tinctis. Long. 23–25 millim.

Hab. MEXICO, Ventanas in Durango 2000 feet (*Forrer*), San Blas in Jalisco, Navarrete in Tepic (*Schumann*); GUATEMALA, Champerico (*Champion*); NICARAGUA, Chontales (*Janson*); PANAMA (*Boucard*).—SOUTH AMERICA [1], Brazil [2], Monte Video [2].

Antennæ pruinose, rufous on the underside towards the apex; the third joint nearly one half longer than the fourth. Clypeus and cheeks covered with a close velvety pubescence; the front and vertex densely clothed with rather long cinereous pubescence, the occiput densely covered with shorter hair. Clypeus laterally at the apex yellowish and bearing a few scattered punctures; labrum more strongly and numerously punctured in the middle; mandibles piceous behind the teeth, obscurely punctured. Thorax thickly clothed with fuscous pubescence, which is especially long on the metathorax; closely and finely punctured; the mesonotum opaque, the rest semi-shining; apex of the metanotum with a somewhat **V**-shaped projecting part in the centre, this part finely rugose, almost opaque, and having a narrow furrow down its middle. Abdomen shining, minutely punctured, and with a bluish tinge in the centre; the basal mark is oblique, broad, truncated at the top, rounded and narrowed at the bottom; the next two marks become narrowed on the lower side, and the apical pair are of nearly equal width throughout; apical segment covered in the middle with large, elongated, clearly separated punctures; the sides coarsely rugose; the apex rounded; beneath and laterally it is densely covered with short hair: the second, third, and fourth segments have a yellow mark on the edges. Legs densely covered with silvery pile, especially on the tibiæ and tarsi, which appear white owing to the pubescence; the tibial spines and the spines on the four hinder tarsi clear white, the anterior tarsal spine blackish; metatarsal brush rufous; claws brownish at the base.

2. **Monedula surinamensis.** (Tab. VI. fig. 23, ♀.)

Apis surinamensis, De Geer, Mém. Ins. iii. p. 569, t. 28. fig. 1.
Monedula surinamensis, Dahlb. Hymen. Eur. i. p. 187; Smith, Cat. Hymen. Ins. iv. p. 332 [1]; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcix. p. 115, t. 1. f. 13 [2].
Bembex continua, Fabr. Syst. Piez. p. 225.
Stictia continua, Illiger, in Rossi's Fauna Etrusca, 2nd edit. ii. p. 131.

Monedula continua, Latr. Gen. Crust. et Ins. iv. p. 100; Lep. de St.-Farg. & Serv. Hist. Nat. Ins., Hymén. iii. p. 287.
Monedula striata, Dahlb. Hymen. Eur. i. p. 493.
Bembex striata, Fabr. Ent. Syst. ii. p. 250; Syst. Piez. p. 226.

Hab. Nicaragua, Chontales (*Belt*).—South America [1], Demerara, Brazil [1], Peru [2], Chili [2]; Antilles, San Domingo [1].

3. **Monedula signata.** (Tab. VI. fig. 22, male organ.)

Vespa signata, Linn. Syst. Nat. i. p. 952.
Bembex signata, Fabr. Syst. Piez. p. 223; Oliv. Encycl. Méth. iv. p. 290.
Bembyx signata, Fabr. Syst. Ent. p. 361.
Monedula signata, Latr. Gen. Crust. et Ins. iv. p. 100; Lep. de St.-Farg. & Serv. Hist. Nat. Ins., Hymén. iii. p. 283; Dahlb. Hymen. Eur. i. p. 185; Smith, Cat. Hymen. Ins. iv. p. 331; Guér. in La Sagra's Hist. fisica y polit. de Cuba, Zool. vii., Ins. p. 320; Cresson, Proc. Ent. Soc. Phil. iv. p. 143 [1]; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcix. p. 87 [2].
Stictia signata, Illiger, in Rossi's Fauna Etrusca, 2nd edit. ii. p. 131; Erichs. in Schomburgk's Reisen Brit.-Guiana, p. 589.
Apis vespiformis, De Geer, Mém. Ins. iii. p. 570, t. 28. fig. 3.

Hab. Mexico, Ventanas in Durango, Tres Marias Is., Presidio, Mazatlan (*Forrer*), San Blas in Jalisco, Atoyac in Vera Cruz (*Schumann*), Teapa and San Juan Bautista in Tabasco (*H. H. Smith*), Temax in North Yucatan (*Gaumer*); British Honduras, R. Sarstoon (*Blancaneaux*); Guatemala, San Joaquin in Vera Paz, Rio Naranjo (*Champion*); Nicaragua, Chontales (*Janson*); Costa Rica, Caché (*Rogers*).—South America, Colombia, Demerara, Brazil, Peru [2]; Antilles, Cuba [1], Jamaica [2].

4. **Monedula maculata.**

Bembex maculata, Fabr. Syst. Piez. p. 222.
Monedula maculata, Dahlb. Hymen. Eur. i. p. 493; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcix. p. 92, t. 1. figg. 3, 7, 11 [1].

Hab. Mexico; Honduras [1]; Panama, Chiriqui [1].—South America [1], Colombia, Venezuela, Guiana, Ecuador, Brazil [1].

5. **Monedula punctata.** (Tab. VI. figg. 24, male organ; 25, ♀.)

Bembyx punctata, Fabr. Syst. Ent. p. 361.
Bembex punctata, Fabr. Ent. Syst. ii. p. 248; Syst. Piez. p. 223.
Stictia punctata, Illiger, in Rossi's Fauna Etrusca, 2nd edit. ii. p. 131.
Monedula punctata, Lep. de St.-Farg. & Serv. Hist. Nat. Ins., Hymén. iii. p. 284; Dahlb. Hymen. Eur. i. p. 184; Smith, Cat. Hymen. Ins. iv. p. 332; Handl. Sitz. der k. Akad. der Wissensch. Wien, xcix. p. 97.
Bembex maculata, Fabr. Syst. Piez. p. 222 (var.).
Stictia maculata, Erichs. in Schomburgk's Reisen Brit.-Guiana, p. 589.

Hab. Mexico, Tierra Colorada in Guerrero 2000 feet (*H. H. Smith*); Guatemala, San

Joaquin in Vera Paz (*Champion*); PANAMA, Bugaba 800 to 1500 feet (*Champion*), Panama city (*Boucard*).—SOUTH AMERICA, Demerara, Brazil.

6. **Monedula dives.**

Monedula dives, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcix. p. 106[1].

Hab. MEXICO[1].

7. **Monedula mexicana.**

Monedula mexicana, Handl. Sitz. der k. Akad. der Wissensch. Wien, xcix. p. 107[1].

Hab. MEXICO[1].

BEMBEX.

Bembyx, Fabricius, Syst. Ent. p. 361 (pt.) (1775).
Bembex, Fabricius, Mant. Ins. i. p. 285; Handlirsch, Sitz. der k. Akad. der Wissensch. Wien, xcv. p. 280 (1887).

This genus is found in all the zoological regions. It has the maxillary palpi four- and the labial palpi two-jointed; the anterior ocellus is linear and transversely curved; the apex of the metathorax is transverse or somewhat convex, and not, or hardly, compressed laterally; the angle formed by the radial with the third transverse cubital nervure is obtuse; and the male has only one spine on the eighth ventral segment.

1. **Bembex multipicta.** (Tab. VI. figg. 17, male organ; 18, ♀.)

Bembex multipicta, Smith, Ann. & Mag. Nat. Hist. 4th ser. xii. p. 300[1].

Hab. MEXICO, Oaxaca[1], Teapa in Tabasco (*H. H. Smith*); GUATEMALA, Torola 1000 feet (*Champion*).—SOUTH AMERICA, Demerara.

Scape black, shining, yellow beneath; the flagellum microscopically pilose; the third joint twice the length of the fourth. Head shining, almost impunctate, except slightly on the vertex; black, with the following parts clear yellow—the orbits narrowly behind, a pear-shaped mark below the ocelli and a small spot on either side of it, a mark above the antennæ and the antennal tubercles, the orbits and face laterally (the yellow on the latter becoming more extended towards the antennæ, thus narrowing the central black spot), the clypeus (except two black marks in the centre at the base, which ends in a round knob), the labrum, and the basal three-fourths of the mandibles; covered with long cinereous hair, which is especially long and thick on the front and vertex. Thorax rather strongly punctured, shining; the prothorax yellow, with two broad lines in the middle, and a narrow one on the edge of the pronotum; mesonotum black, two short lines in front, a line along the edge, and a short mark at the apex touching the scutellum, yellow; mesopleuræ yellow, the sutures and sternum black; an irregularly oval mark on either side of the scutellum; the postscutellum, a line along the metanotum, and a large mark along the edge and side, yellow. Abdomen black,

shining, minutely punctured; a broad line on either side of the basal segment, a much broader one, with an elongate broad black mark in the centre, on the second segment, a curved line on the third, fourth, and fifth segments, and a U-shaped line on the last segment, clear yellow; ventral segments broadly yellow at the sides and narrowly so at their junction; last dorsal segment bearing large, separated punctures, except in the centre, the sides covered with hairs and bristles, the apex broadly rounded, slightly incised in the centre; beneath shining and bearing scattered punctures laterally. Legs clear yellow, the coxæ and trochanters for the greater part black, the femora lined above with black.

2. **Bembex pallidipicta.**

Bembex pallidipicta, Smith, Ann. & Mag. Nat. Hist. 4th ser. xii. p. 300[1].

Hab. Mexico[1].

3. **Bembex mima.**

Bembex mima, Handl. in litt.

Hab. Mexico, Tierra Colorada, Tepetlapa and Venta de Zopilote, all in Guerrero (*H. H. Smith*).

4. **Bembex monodonta.** (Tab. VI. figg. 20, ♂; 20 *a*, male organ.)

Bembex monodonta, Say, in Long's Second Exped. p. 335[1]; Complete Writings, i. p. 226.
Microbembex monodonta, Patton, Bull. U.S. Geol. & Geogr. Surv. v. p. 362.
Bembex ciliata, Smith, Cat. Hymen. Ins. iv. p. 329[2].

Hab. North America[1], Kansas.—Mexico, Presidio near Mazatlan, Tres Marias Is. (*Forrer*), San Blas in Jalisco (*Schumann*), Atoyac in Vera Cruz (*H. H. Smith*); Guatemala, Champerico, Pantaleon 1700 feet (*Champion*).—South America, Amazons[2].

It is doubtful if this is the *Bembex ciliata,* Fabr. (Syst. Piez. p. 226), nor is it clear that it is the *B. ciliata* of Lep. de St.-Fargeau and Serv. (Hist. Nat. Ins., Hymén. iii. p. 279); I should say, however, that it is the *B. ciliata* of Dahlbom (Hym. Eur. i. p. 488). Smith's *B. ciliata* is certainly conspecific with our insect: I have examined his types.

The species appears to be quite common in Central America.

5. **Bembex nubilipennis.** (Tab. VI. fig. 19, ♀.)

Bembex nubilipennis, Cresson, Trans. Am. Ent. Soc. iv. p. 218[1].

Hab. North America, Texas[1].—Mexico, Jaral in Guanajuato (*Schumann*).

STIZUS.

Stizus, Latreille, Gen. Crust. et Ins. iv. p. 100 (1804).
Larra, Smith, Cat. Hymen. Ins. iv. p. 337 (1856).
Bembecinus, Costa, Fauna del Regn. Napoli, Imen. Acul. pt. iii. p. 4 (1859).
Stizomorphus, Costa, loc. cit. p. 7.

The species from our region belong to *Bembecinus*, Costa, sec. Patton. They chiefly differ from typical *Stizus*, Patton, in two of the terminal joints of the male antennæ being spined, and in the "submedial cell of the posterior wings" being "narrow," "extending no more than its own breadth beyond the origin of the transverse medial nervure." There are two North-American species of *Bembecinus*, while the section is also known in Europe, the type being the well-known *Stizus tridens*, Fabr. Three of our species have the second cubital cellule appendiculate.

A. *Second cubital cellule appendiculate.*

1. **Stizus agilis.** (*Stizus godmani*, Tab. V. figg. 8, head from in front, 8 *a*, antenna, ♂; 8 *b*, head from in front, 8 *c*, antenna, ♀.)

Larra agilis, Smith, Ann. & Mag. Nat. Hist. 4th ser. xii. p. 402 (1873) [1].

Hab. MEXICO, Presidio (*Forrer*), Atoyac in Vera Cruz (*Schumann*), Teapa in Tabasco (*H. H. Smith*); GUATEMALA, Teleman in Vera Paz (*Champion*).—BRAZIL, Ega [1].

Antennæ thickened beyond the middle; the scape bright yellow beneath; the flagellum brownish beneath and microscopically pilose; the third joint a little longer than the fourth; the spine on the antepenultimate joint thin, straight, that on the terminal joint much broader, stouter, and slightly curved. Head with scattered shallow punctures; the vertex and occiput bearing long pale hair; the front and clypeus densely covered with silvery pubescence; eyes large, converging beneath; clypeus broadly onvex, the apex roundly and shallowly curved; labrum broadly rounded; the inner orbits, and the head below the antennæ, yellow, the clypeus with a broad black line in the centre. Thorax closely punctured, more strongly so on the median segment; covered with pale hair, the hair especially thick and long on the median segment; the sides with a silky pubescence; a line on the pronotum above, the tegulæ, a short line along them on the mesonotum, a broad mark on each side of the scutellum, the postscutellum, and the teeth on the median segment, bright clear yellow; there is an oblique fine furrow on either side of the median segment, which slopes down from it to the teeth rather abruptly. Abdomen shining, with a bluish tinge; sparsely and finely punctured; covered with pale white hair, the hair longest on the sides and apical segments; the segments banded with yellow at the apices; the last segment strongly punctured, rufous at the apex; the ventral segments densely covered with pale hair and edged with yellow. Legs black; the knees, a line on the femora behind, a line on the anterior four tibiæ in front and on the posterior tibiæ behind, the spines and spurs, and the tarsi (except a line on the basal joint behind), yellow; the tarsi inclining to rufous at the apex.

The example from Presidio has the clypeus black, except at the sides, and there is a short black line below the antennæ, but the scutellum is not marked with yellow

laterally; otherwise I cannot find tangible characters to separate it from the Guatemalan form. Some specimens have the tibiæ broadly lined with yellow, and the tarsi are sometimes more or less yellow. The amount of yellow on the clypeus and inner orbits of the eyes also varies, and the former is sometimes entirely yellow; the femora are sometimes broadly lined with yellow.

The female does not differ much, if at all, in colour from the male.

2. **Stizus lineatus.** (Tab. V. figg. 7, ♂; 7 *a*, head from in front; 7 *b*, antenna.)

Niger, dense albo-hirtus; mesonoto flavo bilineato; segmento mediali flavo nigro lineato; alis hyalinis. ♂.
Long. fere 9 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*Schumann*).

Antennæ yellowish beneath; the scape of a purer yellow than the flagellum; the flagellum becoming gradually thicker to the eleventh joint; the sixth to the eleventh joints broader than long; the eleventh with a short, sharp spine at the apex beneath; the twelfth joint fully one half longer than the eleventh or thirteenth; the latter terminating in a sharp spine, which is obliquely bent downwards. Head densely covered with a silvery sericeous pile and with long pale fuscous hair; obscurely pitted and almost shining; narrower than the thorax; the ocellar region not raised; a yellow heart-shaped spot on the inner side of the posterior ocelli; clypeus somewhat convex; labrum rounded. Thorax silvery-pilose and covered rather closely with long pale fuscous hair. The edges of the prothorax all round, the tubercles, a large irregular mark on the mesopleura, incised in the middle above and more widely so beneath, a large mark in the centre of the metapleura, two narrow longitudinal lines in the centre of the mesonotum, a broader line along the sides extending nearly to the tubercles, the tegulæ, the scutellum, a triangular mark in the centre of the median segment (and with a black—thick at the base, narrowed at the apex—line inside of it), the greater part of the sides (the yellow being very wide on the apex, reaching to the black central line), and the lateral spines, yellow. Median segment punctured. Abdomen shining, punctured, closely covered with long pale silvery hair; all the segments banded with yellow at the apex; the black on the basal segment is incised on either side in the middle, leaving a square black part; on the second segment the black broadly projects, the black divided in the middle and behind almost cut off from the basal portion by a yellow interrupted transverse line. Legs yellow; the coxæ, trochanters, femora, and tibiæ irregularly lined with black.

3. **Stizus flavus.** (Tab. V. figg. 9, ♂; 9 *a*, head from in front; 9 *b*, antenna; 9 *c*, male organ.)

Flavus, fusco-hirtus; flagello antennarum superne, lineis 3 mesonoto, abdominisque apice infra, nigris; alis hyalinis, nervis nigris. ♂.
Long. 10 millim.

Hab. MEXICO, Jalisco (*Schumann*); GUATEMALA, Teleman in Vera Paz (*Champion*).

Antennæ thickened gradually to the apex; the third joint about one quarter longer than the fourth; the third to the sixth joints longer than broad, the seventh to the eleventh broader than long; the eleventh with a thin curved spine, reaching to the apical fourth of the twelfth, projecting from the apex on the underside; the twelfth joint twice the length of the eleventh, curved broadly on the underside; the thirteenth beak-shaped, ending in a sharp spine. Head punctured, densely covered with stiff fuscous hair; the clypeus with a silvery pile; ocellar region not raised; the anterior ocellus with a black dilated mark in front and to the posterior ocelli a black oblique line runs from the eyes; occiput black; clypeus convex; apex of the labrum subtransverse. Thorax shining, punctured, bearing short fuscous hair; a broad central black line and two shorter lateral ones on the mesonotum; scutellum with the extreme base black, the black projecting in the centre as an irregular mark (sharp at the apex) nearly to the middle; median segment edged with black. Abdomen stout, shining, punctured, the segments edged with black; the apical three ventral segments also black. Legs stout, the femora and tibiæ thickened; the tibiæ sparsely spined, the posterior pair with a narrow black line behind. The first transverse cubital nervure straight, elbowed sharply before the middle.

B. *Second cubital cellule not appendiculate.*

4. **Stizus moneduloides.**

Larra moneduloides, Smith, Cat. Hymen. Ins. iv. p. 346 [1].

Hab. NORTH AMERICA, Florida [1].—MEXICO, Presidio (*Forrer*), Teapa in Tabasco (*H. H. Smith*); GUATEMALA, San Gerónimo (*Champion*).

Fam. PHILANTHIDÆ.

This well-marked and beautiful family of insects is fairly well represented in Mexico; but apparently the species become less numerous southwards.

APHILANTHOPS.

Aphilanthops, Patton, Proc. Bost. Soc. Nat. Hist. xx. p. 401 (1880).

In the second cubital cellule not being appendiculate this genus agrees with *Philanthus*; but differs from it in having the eyes entire and the antennæ inserted above the middle of the face, and also in having the hypopygium margined and forming a well-marked area as in *Cerceris*.

Two North-American species have been described.

1. **Aphilanthops marginipennis.** (Tab. VII. fig. 1, ♂.)

Flavus, thorace flavo et fulvo maculato; pedibus fulvis; alis fere hyalinis, antice fusco-fumatis, stigmate et costa ferrugineis; area cordiformis læva. ♂.

Long. 11 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*Schumann*).

Eyes slightly diverging beneath. Ocelli almost forming a triangle, separated from the eyes by more than the length of the third antennal joint, and from each other by barely the length of the fourth. Clypeus at apex fringed with long fulvous hair; the middle projecting and armed with two blunt teeth. Third antennal joint as long as the basal two joints united, and nearly twice the length of the fourth. The punctuation of the head is moderately coarse; much sparser on the face. The orbits of the eyes behind the occiput and the back of the vertex are rufous; the oral region, face, cheeks, inner orbits to the ocelli, and a stripe between the antennæ to near the ocelli are yellow; the rest of the head is black. The pile is thick and silvery-white; it is much longer on the face. Mandibles yellow and rufous, black at the apex. Thorax densely covered with short silvery-white pubescence; coarsely and closely punctured; the scutellum sparsely punctured; the metanotum almost impunctate; the median segment rugosely punctured; the heart-shaped area smooth, shining, slightly raised, deeply furrowed down the middle, the furrow extending to the end of the median segment, the apex of which has an obliquely rounded slope. The ground-colour of the thorax is black; the pronotum above, the tubercles, the metanotum, and two elongated stripes on the side of the median segment, yellow; the scutellum, tegulæ, breast, and an irregular splash on the mesopleuræ, rufous. Abdomen elongate-oval, a little longer than the head and thorax united; segments 2–5 furrowed at the base and in the middle; sparsely punctured, the sixth segment almost impunctate; the basal and central depressions black, the central inclining to rufous; the rest of the abdomen yellow, except the pygidial area, which is rufous; the sides margined, slightly curved, and narrowed gradually to the apex. The ventral segments black and rufous, the basal segment for the greater part rufous, the others yellow at the apex. The fringe of hairs on the third and fourth segments occupies the middle three-fourths; it is pale fulvous, soft, and silky, each hair being clearly separated from its neighbour and nearly as long as the segments. On the fifth segment, at its junction with the sixth, in the middle are two erect, stiff, comb-like, almost continuous, yellowish processes, which are black or piceous-black on the top. The ventral segments are sparsely punctured, furrowed at the base and apex. Legs rufous; the hind tibiæ with a black line on the outer side. The cloud in the fore wing occupies the base of the median, the radial, and the upper part of the cubital cellules. The first recurrent nervure is received shortly before the basal third of the second cellule; the second in the third cubital cellule a little less than the length of the top of the second cubital cellule beyond the second cubital nervure; the latter is curved, the first cubital nervure hardly so.

2. **Aphilanthops punctifrons.** (Tab. VII. fig. 2.)

Niger; facie, maculis thoracis, lineis abdominis, pedibusque flavis; alis fumatis; flagello subtus pallide fulvo; area cordiformis punctata. ♀.

Long. 15 millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Eyes diverging beneath. Ocelli in a triangle, separated from the eyes by the length of the third antennal joint, and from each other by the length of the fourth. Clypeus but very slightly convex; the apex produced, rounded, projecting outwardly; the lateral margin fringed with long yellow hair. Front and vertex rather strongly punctured; the face and oral region not so strongly and more sparsely. Antennal tubercle broad, furrowed in the middle, dilated below the antennæ, reaching to the base of the clypeus. The head is clothed with short pubescence; the face sparsely covered with silvery hair. The face, oral region, cheeks, inner orbits of the eyes to the top of the antennal tubercle, the antennal tubercle, and the mandibles (except the apex and the edges of the latter and a spot behind the top of the eyes), yellow; the apex of the clypeus black. Thorax punctured; the punctures above sparse, at the sides much closer and coarser; on the scutellum and metanotum the punctures are more widely apart than on the mesonotum. The heart-shaped area of the median segment with large scattered punctures, except on the centre, which is furrowed. Apex of the median segment obliquely rounded. A spot on either side of the pronotum, the tegulæ, a spot on the pleuræ below them, a spot on either side of the scutellum, a broad elongated line on the sides of the median segment, and two spots on the heart-shaped area at the base, yellow. Abdomen longer than the head and thorax united; blunt at the base and apex, irregularly covered with large punctures; the second, third, and fourth segments with a transverse depression at the base and apex. Pygidial area irregularly reticulated, opaque, the sides margined, broader at the base than at the apex, the latter rounded, the sides with large punctures; the lateral fringe moderately long, golden-fulvous. Incision in the hypopygium reaching to the middle of the segment, rounded at the base and not much narrowed there; the segment depressed on either side of the incision. The second ventral segment is depressed on the apical half, the basal part being considerably higher than it, margined at the base, the margin being continued out from the middle as a short stout triangular keel. There is a broad interrupted yellow band on the first abdominal segment; a narrower continuous one on the second (widest at the sides), a still narrower, interrupted one on the third, and an elongated mark on either side of the fourth and fifth segments. All the legs are yellow in front, except on the hinder trochanters. The first recurrent nervure is received about the length of the top of the second cubital cellule from the first transverse cubital nervure; the second is interstitial.

CERCERIS.

Cerceris, Latreille, Hist. Nat. Crust. et Ins. xiii. p. 315 (1804).

I have arranged the species according to the form of the clypeus in the female; and have placed those of which we have no females nearest to the group to which they are apparently most nearly related.

A. *Basal segment of the abdomen ovate, the second campanulate.*

1. **Cerceris binodis.** (Tab. VII. figg. 3, ♀; 3 *a*, face; 3 *b*, face, lateral view; 3 *c*, pygidial area; 3 *d*, hypopygium; 3 *e*, male organ.)

Cerceris binodis, Spinola, Ann. Soc. Ent. Fr. x. p. 117, t. 3. f. 3 (♂) [1]; Smith, Cat. Hymen. iv. p. 464 [2].

Diamma spinolæ, Dahlb. Hymen. Eur. i. p. 225.

Diesmus spinolæ, Dahlb. loc. cit. p. 502 [3].

Hab. MEXICO, Acaguizotla in Guerrero (*H. H. Smith*), Cordova (*coll. Saussure*), Valladolid in Yucatan (*Gaumer*); GUATEMALA, Sinanja in Vera Paz (*Champion*).—SOUTH AMERICA, Cayenne [1 2 3], Brazil [2].

The Central-American specimens do not agree quite in coloration with Spinola's description, *e. g.* the eyes are not marked with yellow behind, the scutellum wants the yellow marks, the abdomen is broadly rufous at the apex, and the legs are darker coloured. Judging, too, by the figure, there is a difference in the shape of the second cubital cellule. Under these circumstances, it is advisable to give a full description of our insect:—

Clypei media pars elevata, triangularis; oculorum margines interni clypeum versus divergentes; segmenti mediani area cordiformis opaca; abdominis segmento 1° petiolare; nigra, segmento mediani maculis duabus flavis, abdominis segmentis 5°–7^{m} rufo-fulvis; alis fusco-hyalinis, antice fumato. ♀.
Long. 13–15 millim.

Head moderately coarsely punctured, covered with rather long fuscous hair on the top, the face with a longish silvery pubescence. Eyes slightly diverging beneath. Ocelli hardly forming a triangle, separated from the eyes by rather more than the length of the third antennal joint. Clypeus sharply snout-shaped in the middle, the apex curved. Mandibles shining, grooved, aciculate at the base, bearing scattered punctures, and piceous at the apex. Thorax coarsely punctured; the mesopleuræ at the apex shining, impunctate, striolated above; scutellum with the punctures fewer and sparser; on the median segment the punctures are distinctly larger and deeper than on the mesonotum, but more widely apart. The heart-shaped area of the median segment obscurely aciculate, indistinctly keeled down the middle. Median segment roundly curved. Petiole longer than broad; slightly narrowed towards the apex; the base of the second segment narrow, petioliform, projecting at the apex of the narrowed part, and becoming gradually widened from thence to the apex; beneath, on the basal

portion, is a short blunt tooth, and on the attenuated middle portion is a longish curved tooth. Abdominal segments sparsely punctured, except at the extreme base and apex. Pygidial area shining, irregularly reticulated, narrowed towards the apex, which is almost truncated. Incision in the hypopygium reaching to the base. The third antennal joint is one third longer than the fourth; the fourth and fifth joints are subequal; the basal six joints are reddish beneath. The inner orbits of the eyes, the antennal keel (which is stout), two lines on the collar, a small round mark on either side of the scutellum, an interrupted line on the metanotum, and two elongated broad marks on either side of the median segment are yellow. There are three rounded marks on the apex of the basal part of the petiole, and there is a line in its centre beneath; the apex of the petiole and the other segments at the apex are yellow; there is a brick-red band in front of the yellow apex of the petiole, and the third and following segments are dull ferruginous. A line on the base of the femora and tibiæ in front and the metatarsus, spurs, and spines are white. The male has the clypeus flatly convex, the apex transverse in the middle; and the pygidial area shining, sparsely punctured.

The four specimens received do not show any variation in colour. Like *C. simulans*, the species bears a marked resemblance to a *Polybia*.

B. *Second abdominal segment not campanulate.*

i. *Petiole elongate, distinctly longer than broad.*

2. Cerceris simulans.

Cerceris simulans, Saussure, Reise d. Novara, Hymen. p. 87, t. 4. f. 53 (♂)[1].

Hab. Mexico, temperate region[1].

3. Cerceris montezuma.

Clypei media pars convexa, apice producta; oculorum margines interni fere paralleli; segmenti mediani area cordiformis punctata; nigra, metanoto abdominisque basi flavis; alis fere hyalinis, antice fumatis, stigmate ochraceo. ♀.

Long. fere 11 millim.

Hab. Mexico (*coll. Saussure*).

Eyes slightly converging beneath. Head coarsely punctured; the face covered thickly with silvery, the front and vertex more sparsely with long fuscous, hair. Ocelli separated from the eyes by more than the length of the third antennal joint and from each other by the length of the fourth. Clypeus sharply convex in the middle, the convex part narrow, and becoming slightly narrowed towards the apex, which forms a projecting snout; the extreme apex below the snout bidentate. Antennæ covered with a close pile; the first joint as long as the second and third united; the third more than twice the length of the second, the fourth hardly twice its length. Mesonotum

coarsely longitudinally punctured; median segment with the punctures larger, deeper, and more clearly separated; the heart-shaped area finely and closely punctured, furrowed down the centre. Pleuræ coarsely punctured; the hollow below the point of insertion of the hind wings finely striated. The thorax bearing long hair, fuscous above, paler on the pleuræ. Abdomen elongate; the petiole distinctly longer than broad; shining, sparsely punctured; the abdominal segments punctured like the median segment at the base, but with the punctures more widely apart; the apical segments with the punctures finer. Pygidial area elongate, the extreme base narrowed, the apex rounded, the surface irregularly transversely striated; the extreme apex depressed; the lateral hair-fringe thick, pale. Incision in the terminal ventral segment very short, rounded at the base, not much longer than broad, about one fourth of the length of the segment, which is closely punctured and depressed in the centre; the other segments finely punctured; the third, fourth, and fifth closely covered with dark fulvous hair. The femora bear longish pale hair; the tibiæ and tarsi are closely covered with silver pile. Cubitus elongate; the recurrent nervure received shortly before the middle. The only coloured parts are the metanotum, the sides and apex of the petiole, a narrow line on the sides of the second segment, the petiole beneath, and two spots on the apex of the second ventral segment.

This is a narrower and more elongate species than any other of the genus known from our region. In the elongated petiole it agrees with *C. semipetiolata*; but differs from it in the form of the clypeus, in which it resembles the group of *C. chiriquensis*, the clypeus, however, is narrower in the middle than in any species of that section.

ii. *Petiole not elongate, broader than long.*

a. *Clypeus* (♀) *simple, subconvex, the central region not separated from the lateral.*

4. **Cerceris tolteca.** (Tab. VII. figg. 4, ♀; 4 *a*, clypeus; 4 *b*, pygidium; 4 *c*, hypopygium.)

Cerceris tolteca, Saussure, Reise d. Novara, Hymen. p. 94 (♂ ♀)[1].

Hab. Mexico, Cuernavaca[1], Chilpancingo and Tierra Colorada in Guerrero (*H. H. Smith*), Temax in North Yucatan (*Gaumer*).

Eyes parallel. Ocelli not forming a triangle; the posterior pair separated from the eyes by nearly the length of the second and third antennal joints united, and from each other by almost the length of the third joint. Clypeus flat, the apex slightly gaping and with a semicircular incision in the middle. Antennal tubercle compressed, sharply pointed, elongate, depressed at the base and apex. Head moderately strongly punctured. The clypeus (except the sides, which are black), the inner orbits of the eyes to near the top, a line above the antennal tubercles, two oblique marks behind the ocelli and a larger mark behind the eyes, and the mandibles (except at the apex),

yellow. Scape fulvous or blackish, yellow beneath; flagellum reddish-fulvous beneath; the third joint hardly one quarter longer than the fourth and twice the length of the second, the fourth slightly longer than the fifth. Punctuation of the thorax moderately strong; an oblique shining, impunctate space beneath the point of insertion of the hind wings; median segment with a moderately rounded slope; furrowed down the middle; the heart-shaped area shining, impunctate, furrowed. Punctuation of the abdomen comparatively weak, and becoming still weaker towards the apex, but moderately strong at the base. Petiole wider than long. Pygidial area elongate, slightly narrower at the base than at the apex, the latter rounded; the centre rugose, and covered with pale depressed hair; the sides coarsely punctured. Beneath, the last segment is stoutly keeled laterally and clothed with long pile. The apical three-fourths of the petiole, a large mark on the side of the second segment, the third segment (except at the base and apex), the apex of the fourth and fifth segments, and the sixth segment at the side are yellow. Legs yellow; the coxæ, trochanters, and a short line on the femora, black. The pubescence is short and silvery.

In the male the punctuation is stronger; the face below the antennæ is entirely yellow—there is only a small mark behind the eyes and none behind the ocelli; the base only of the flagellum is dull rufous; the clypeus is slightly convex, the apex produced into a rounded point and bordered with long white hair; the second abdominal segment wants the yellow mark and the band on the third segment is much narrower; the pygidial area bears large, widely separated punctures, the sides bulge out slightly in the middle, and the apex is almost truncated, projecting at the corners; the ventral segments are irregularly banded with yellow; the femora bear more black; and the coxæ and trochanters are yellow beneath.

Length 11–12 millim.

The scutellum and metanotum may have the yellow markings greatly reduced, and the two marks on the median segment may be absent, as also the marks on the side of the second abdominal segment; the petiole may be black; and the legs vary in the amount of black they bear.

5. **Cerceris strigosa.** (Tab. VII. figg. 5, ♀; 5 *a*, head; 5 *b*, clypeus; 5 *c*, pygidium; 5 *d*, hypopygium.)

Clypeo convexo, apice truncato; oculorum margines fere paralleli; area cordiformis strigosa; nigra, facie, linea pronoti, metanoto, abdominis segmentis marginibus apicalibus, tibiis, tarsisque flavis; alis fere hyalinis, antice fulvis, stigmate fulvo. ♀.

Long. 8 millim.

Hab. Mexico, Ciudad in Durango 8100 feet (*Forrer*).

Antennæ black, the apical joint fulvous beneath; the third joint one quarter longer than the fourth. Eyes almost parallel. Ocelli hardly forming a triangle, the posterior pair separated from the eyes by more than the length of the third antennal joint, and

by less than twice the length of the second. Clypeus convex, projecting gradually to the apex, which also becomes narrowed; the apex almost truncate. Antennal keel gradually brought to a point, almost reaching to the base of the clypeus. Head coarsely rugosely punctured, covered, particularly on the top, with long fuscous hair; black, the cheeks and clypeus yellow. Thorax rugosely punctured, the base of the mesonotum and the scutellum rugosely striolate; the propleuræ with some stout striations; basal area of the median segment well defined, closely longitudinally striated, the centre furrowed. The thorax covered with long fuscous hairs. A line on the pronotum, the tegulæ, and metanotum yellow. Petiole convex, a little longer than wide, bearing longish fuscous hair and scattered punctures; a somewhat triangular fovea at the apex. Abdominal segments with scattered punctures in the middle; the base and apex aciculate. Pygidial area narrowed at the base, the apex rounded, irregularly wrinkled; hypopygium with the incision wide, but somewhat longer than broad; lateral bristles golden-fulvous; the sides of the apical segment coarsely punctured, the apex aciculate; ventral surface densely covered with fuscous pubescence; two marks on the petiole and a broad band on segments 2–4 yellow. The knees, the four anterior tibiæ and tarsi, the hind tibiæ (except at the apex), and the base of the hind tarsi yellow. First recurrent nervure received a little beyond the centre of the cellule.

The male has the first joint of the antennæ shorter than the third, which is not much longer than the fourth; the clypeus broadly convex, but not strongly so, the apex broad, almost truncate; the pygidial area with large punctures, shining, covered with longish, soft, white hair.

6. **Cerceris maximiliani.** (Tab. VII. figg. 6, ♀; 6 *a*, clypeus; 6 *b*, pygidium; 6 *c*, hypopygium.)

Cerceris maximiliani, Saussure, Reise d. Novara, Hymen. p. 94 (♀)[1].

Hab. Mexico, Chilpancingo and Venta de Zopilote in Guerrero, Orizaba, Atoyac in Vera Cruz (*H. H. Smith*), Eastern Cordillera[1], Temax in North Yucatan (*Gaumer*); Guatemala, Senahu in Vera Paz (*Champion*); Panama, Bugaba (*Champion*).

We give a fresh description from the specimens before us:—

Clypei media pars convexa, margine apicali fere dentato; oculorum margines interni fere paralleli; area cordiformis aciculata; nigra, abdominis segmentis 3°–6ᵐ fulvo marginatis; alis flavo-hyalinis, antice flavo-fumato. ♀.

Long. 12 millim.

Eyes slightly diverging beneath. Ocelli separated from the eyes by almost the length of the second and third antennal joints united; the hind pair separated from each other by the length of the fourth joint. Antennal keel large, nearly as long as the basal joint of the antennæ, moderately acute. Clypeus moderately convex, hardly projecting in the middle; the apex with a shallow broad curve, scarcely forming an

incision. The third joint of the antennæ not one quarter longer than the fourth, which is nearly equal in length to the fifth; the flagellum more or less rufous beneath. The vertex sparsely, the face and cheeks densely, covered with silvery or golden hair, and coarsely punctured. Thorax coarsely punctured, almost as strongly as the head; the median segment, as usual, having the punctures larger and more widely separated; the heart-shaped area of the median segment aciculate, channelled in the middle. Median segment short, abruptly rounded, almost perpendicular at the apex. Petiole wider than long, bearing large widely separated punctures, shining; the other abdominal segments more opaque, densely covered with a silvery pile, and hardly so strongly punctured as the thorax. Pygidial area rugose, narrowed and rounded at the apex; the outer margin fringed with long stout hairs, which form brushes. Penultimate ventral segment depressed largely in the centre; the apex raised and projecting in the middle; the incision in the hypopygium very short. A line on either side of the pronotum, the metanotum in the middle, and the third, fourth, and fifth abdominal segments broadly at the apex, fulvous-yellow; the apical segment rufous, blackish at the apex, the sides yellow. The legs densely covered with silvery pile; the tibiæ white in front, the spines being also white.

The male has the inner orbits broadly, the clypeus (more or less), a curved mark behind the ocelli and a smaller one behind the eye near the top, a mark on either side of the scutellum, the metanotum (more or less), and two small marks on the apex of the petiole, yellow; and the bands on the abdominal segments are broader and of a clearer yellow, the fulvous colour being almost absent. The fore tibiæ and tarsi are for the greater part yellow; the sculpture is stronger and coarser than in the female; the clypeus slightly gapes and is roundly incised; the pygidial area is covered with long white hair; and the wings are hardly so yellow, in some specimens having a fuscous tinge, especially along the fore margin. The relative lengths of the antennal joints are as in the female. Length 9–12 millim.

b. *Clypeus* (♀) *convex, nose-shaped, narrowed towards the apex, not free in the centre, the apex obliquely truncated; the thorax marked largely with yellow.*

7. **Cerceris aureo-facialis.**

Nigra, genæ, lineis pronoti, tegulis, metanoto, abdominis segmentisque 2°–6ᵐ late, flavis; alis flavo-hyalinis, antice fumatis, stigmate ochraceo; area cordiformis striolata.
Long. 9 millim.

Hab. Mexico, Orizaba (*H. H. Smith*).

♂. Eyes almost parallel. Hinder ocelli separated from the eyes by somewhat more than the length of the third and from each other by the length of the fourth antennal joint. Head rather strongly punctured; clypeus broadly triangularly convex in the middle, and, like the cheeks, densely covered with golden, the vertex and front with

long fuscous hair; the apex of the clypeus without teeth. Thorax more strongly punctured than the head. The heart-shaped area of the median segment shining, coarsely striolate. Abdomen strongly punctured; petiole nodose; pygidial area shining, narrowed to the apex, and with large punctures. The basal ventral segment is punctured; the others are aciculate, and covered densely with golden pubescence, the apical segments with white pubescence. Cubitus almost triangular, the recurrent nervure received before the middle. The third antennal joint is nearly three times, the fourth twice, the length of the second. A broad triangular mark on the cheeks, an interrupted line on the pronotum, the tegulæ, the metanotum, and a broad band on the abdominal segments 2–6, ochreous-yellow; flagellum rufous beneath towards the base; the four anterior tibiæ and tarsi testaceous; the hind calcaria yellowish.

Apparently nearly related to *C. maximiliani*; but has all the abdominal segments (except the petiole) yellow, and the heart-shaped area of the median segment striolated.

8. **Cerceris geniculata.** (Tab. VII. figg. 7, head, ♀; 7 *a*, clypeus; 7 *b*, ditto from the side.)

Nigra, facie, basi mandibularum, lineis duabus pronoti, scutello, maculis duabus segmento mediali, marginibus abdominis segmentis 1°, 3°, 4°, 5°, tibiis tarsisque anterioribus, flavis; alis hyalinis, antice fusco, stigmate sordide fulvo. ♀.

Long. 10 millim.

Hab. Mexico, Cuautla (*coll. Saussure*).

Eyes slightly converging beneath. Clypeus convex in the centre, the apex transverse, five-dentate. Hinder ocelli separated from the eyes by somewhat less than the length of the second and third antennal joints united and by the length of the third from each other. Head closely rugosely punctured, shortly pilose; a keel runs down from the ocelli; the cheeks covered densely with silvery pubescence. Third antennal joint shorter than the first and not much longer than the fourth. Thorax strongly punctured, the punctures on the mesonotum longer than broad, elongate; on the median segment they are round and much deeper. The heart-shaped area of the median segment smooth, punctured at the edges; middle of the metapleura smooth, impunctate, shining; metanotum punctured. The pubescence on the thorax is short, close, and fuscous in colour. Abdomen with the punctuation closer and not so strong as on the thorax; petiole short, much broader than long. Pygidial area slightly and roundly narrowed at the base, the apex rounded; rufous, darkened at the base, irregularly transversely striolate. Apical ventral segments densely pilose. Legs covered with a close, fine, silvery pubescence; the tibial and tarsal spines glistening white.

9. **Cerceris feralis.**

Long. 7–7½ millim.

Hab. Mexico (*coll. Saussure*).

♂. Eyes slightly converging beneath. Hinder ocelli separated from the eyes by fully the length of the third antennal joint and by a somewhat less distance from each other. Clypeus in the middle convex; the apex rounded, projecting, and without teeth. The hair on the head is long and griseous; the punctuation very coarse. Mesonotum and mesopleuræ very coarsely punctured; the propleuræ shining, impunctate; the heart-shaped area of the median segment not clearly defined, strongly punctured; the median segment bearing large, deep, roundish punctures. Abdomen strongly punctured; pygidial area shining, marked with some large punctures, slightly narrowed at the base, the apex almost transverse. The face, two lines on the pronotum, the tegulæ in front, the metanotum, two marks on the median segment, a broad band on the first and third, and a narrow band on the fourth to the sixth abdominal segments, a mark on the basal ventral segment, and a complete band on the second and third, the four anterior tarsi, the four anterior tibiæ in front, and the posterior tibiæ at the base, clear yellow. Wings almost hyaline, the cubital and radial cellules clouded; stigma sordid fulvous; the recurrent nervure in the second cubital received before the middle, near the basal third. Antennæ for the greater part rufo-testaceous beneath.

√ 10. **Cerceris chiriquensis.** (Tab. VII. figg. 8, clypeus, ♀; 8 *a*, pygidium; 8 *b*, hypopygium.)

Clypei media pars convexa, margine apicali depresso; oculorum margines interni fere paralleli; area cordiformis læva, fere punctata; orbitis oculorum, scutello, metanoto, segmento mediali, petiolo, apice abdominisque 3° segmento, flavis; alis fere hyalinis, antice fumatis.
Long. 12 millim.

Hab. Panama, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Eyes a little converging beneath. Ocelli separated from the eyes by the length of the third antennal joint and from each other by the length of the fourth, almost forming a triangle. Face convex, projecting at the apex into a snout; from it the clypeus retreats towards the direction of the base of the legs, and is slightly concave in the middle. Antennal tubercle elongate, compressed, acute. Head above coarsely rugose, below the antennæ aciculate, with scattered punctures. Third antennal joint one half longer than the fourth. Front and vertex with long fuscous hair; face, cheeks, and clypeus with a silvery pubescence. Thorax rugosely punctured, the punctures running into reticulations on the mesonotum; scutellum with scattered punctures; the heart-shaped area of the median segment shining, impunctate, its sides foveolate; the oblique furrow on the mesopleuræ distinct, deep, but not very wide. Median segment with a gradual rounded slope. Petiole wider than long, marked with scattered punctures; the other segments with a moderately strong punctuation at the base, but it becomes weaker towards the apical segment. Pygidial area widening out at the middle; at the base transversely rugose; the rest with clearly-separated striæ; the apex transverse; the sides aciculate, bearing large punc-

tures. Hypopygium aciculate; a small triangular incision at the apex, with a clearly-defined raised border; behind this it is depressed. The abdomen is more than twice the length of the thorax. The inner orbits of the eyes broadly, the centre of the clypeus, the scape beneath, the pronotum above, the scutellum, the metanotum, the greater part of the median segment, a line down the side, the petiole, and a band on the third segment, clear yellow. The anterior four tibiæ and tarsi, a line on the femora in front, and the spurs obscure yellow; the knees testaceous; the tarsal spines fulvous. Wings fusco-hyaline, the apex smoky, the stigma dark fuscous; cubitus elongate, the recurrent nervure received quite close to the middle.

11. **Cerceris flavo-maculata.** (Tab. VII. fig. 9, ♀.)

Clypei media pars convexa, margine apicali depresso; oculorum margines interni paralleli; area cordiformis punctata, laterali rugosa; nigra, clypeo, oculorum margines, scutelli maculis duabus, metanoto, segmento mediali maculis 4, apice petioli et segmento 3°, flavis; alis fere hyalinis, antice fusco-fumato. ♀.

Long. 7 millim.

Hab. Costa Rica, Rio Sucio, Caché (*Rogers*).

Eyes nearly parallel. Ocelli almost in a triangle; the posterior pair separated from the eyes by a little more than the length of the third antennal joint, and by nearly the same length from each other. Third antennal joint nearly one half the length of the fourth. Clypeus broadly convex, projecting gradually to the apex, which projects obliquely over the labium. Head above the antennæ rugosely punctured; below it aciculate, marked with scattered punctures. Thorax rugosely punctured; the punctures on the median segment large and deep; the heart-shaped area rugosely striolate laterally, the centre aciculate, and with a narrow not very distinct central furrow; scutellum convex. Mesopleural furrow not very distinct; propleura aciculate, hollowed, with a few striæ in the centre; the hollow on the metapleuræ wide and deep, slightly aciculate. Median segment with a gradual rounded slope. Abdomen not much longer than the head and thorax united, strongly punctured throughout. Pygidial area straight; aciculate, the base with a few large punctures; hollowed towards the apex; slightly narrowed at the base; the apex almost transverse. Hypopygium with the incision extending to the basal third; sharply triangular at the base. The clypeus, the inner orbits of the eyes, the scape beneath, a small mark behind the eyes, a broad interrupted line on the pronotum, a mark on either side of the scutellum, the metanotum, an oblique mark on either side of the apex of the heart-shaped area, a stripe down the side of the median segment, the sides and the greater part of the petiole above, a narrow band on the third segment, a much narrower one on the apex of the fourth and fifth segments, and the second and third ventral segments at the apex, clear yellow; the greater part of the pygidial area fulvous. All the femora at the apex, the tibiæ in front, and the anterior four tarsi in front, white; the spurs and spines pale testaceous.

The male has the clypeus convex, but not largely so, rounded at the apex, the extreme middle of the apex with a small projection, apparently incised; rugosely punctured. Pygidial area finely and irregularly punctured. The clypeal projections, the antennal tubercle, the scutellum entirely, the metanotum, two oblique marks on the middle of the median segment and a small irregular mark on the side, the greater part of the petiole, an interrupted band on the second segment, a well-marked one on the fourth, a narrower one on the fifth, and a still narrower one on the sixth, yellow. Legs as in the female.

12. **Cerceris otomia.** (Tab. VII. fig. 10, ♀.)

Cerceris otomia, Saussure, Reise d. Novara, Hymen. p. 99 (♂ ♀)[1].

Hab. Mexico, Zinapecuaro in Michoacan (*Saussure*[1]), Eastern Cordillera (*Sumichrast*[1]), Mexico city, Atoyac and Fortin in Vera Cruz (*H. H. Smith*).

The triangular snout-shape of the clypeus, obliquely truncated beneath (the truncation is white), distinguishes this species. *C. marginata* has the centre of the clypeus similar in form, but much narrower, while the body is entirely black, without any markings whatever.

13. **Cerceris flavida.**

Long. 7 millim.

Hab. Mexico, Cordova (*coll. Saussure*).

Eyes slightly diverging beneath. Hinder ocelli separated from the eyes by the length of the second and third antennal joints united, and from each other by the length of the fourth. Third antennal joint twice the length of, the fourth hardly one half longer than, the second. Clypeus in the middle sharply convex; the convex portion triangular, gradually (but slightly) produced to the apex, from which it slopes down obliquely. Punctuation of the head moderate; there is a transverse depression behind the ocelli; the hair is longish and griseous. Punctuation of the mesonotum and median segment weaker and more scattered than on the head; the mesopleuræ coarsely rugose; the heart-shaped area of the median segment impunctate, with a crenulated furrow down its centre; the pleuræ densely covered with long griseous hair. Abdomen shining; the punctuation as on the mesonotum; the petiole as long as broad; pygidial area elongate, narrowed at the base and apex, the surface rough; lateral hair-fringe pale, moderate; incision in the hypopygium short, not reaching to the middle, the hypopygium finely and closely punctured. The face (except the oblique lower part of the clypeus), an interrupted line on the pronotum, the tegulæ, the metanotum, a line on all the abdominal segments (except the last), two lines on the third and fourth ventral segments, the apex of the femora, and the tibiæ and tarsi, yellow; the apex of the

hinder tibiæ marked with black, the tarsi infuscated. Wings almost hyaline; the second transverse cubital nervure obsolete, the cubitus being thus continuous with the third cubital cellule.

An example, which is apparently the male of this species, has the clypeus flattish, the apex with three blunt, short, indistinct teeth; the head coloured as in the female; the scape yellow beneath; the median segment with two marks; the yellow on the petiole broader and interrupted; the legs yellow, with the femora more or less marked with black at the base or apex.

14. **Cerceris marginata.** (Tab. VII. figg. 11, clypeus, ♀; 11 *a*, pygidium; 11 *b*, hypopygium.)

Clypei media pars elevata, margine apicali triangulari, dentato; oculorum margines interni paralleli; area cordiformis rugoso-punctata; nigra, petiolo ex parte sordide flavo; alis fuscis, antice fumato. ♀.
Long. 9 millim.

Hab. Costa Rica, Volcan de Irazu 6000 to 7000 feet (*Rogers*).

Eyes slightly converging beneath, not reaching to the top of the head. Ocelli in a triangle, separated from the eyes by nearly the length of the second and third antennal joints united, and from each other by the length of the second. Clypeus broadly carinate in the middle, projecting at the apex, where it ends in a blunt tooth; looked at from above it appears triangular. Antennal tubercle short, sharp, compressed. The punctuation of the head is coarse and runs into reticulations. The third antennal joint is one third longer than the fourth. Thorax coarsely punctured, the punctures running into reticulations; the heart-shaped area of the median segment longitudinally striolated; median segment with an obliquely rounded slope. Petiole longer than broad. Pygidial area rugose, almost rounded at the apex. Apical ventral segment flat, transverse at the apex, coarsely punctured; the spines long, stout, acute at the apex. The antennal area is rufous beneath; the inner orbits of the eyes and the sides and apex of the petiole are yellowish-white.

The affinities of this species are clearly with *C. otomia*; but the very different form of the clypeus and hypopygium serves readily to distinguish the two.

c. *Clypeus* (♀) *subconvex, the apex directed inwardly, and forming two leaf-like plates.*

15. **Cerceris mexicana.** (Tab. VII. figg. 12, ♀; 12 *a*, head; 12 *b*, clypeal plates.)

Cerceris mexicana, Saussure, Reise d. Novara, Hymen. p. 101, t. 4. fig. 59 (♂ ♀)[1].

Hab. Mexico, Tampico [1], Cuautla [1], Teapa in Tabasco (*H. H. Smith*), Temax in North Yucatan (*Gaumer*).

16. **Cerceris huastecæ.** (Tab. VII. figg. 13, head, ♀; 13 *a*, clypeal plates.)

Cerceris huastecæ, Saussure, Reise d. Novara, Hymen. p. 102, t. 4. fig. 60 (♀)[1].

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*), Tampico[1].

17. **Cerceris semipetiolata.** (Tab. VII. figg. 14, head, ♀; 14 *a*, clypeal plates; 14 *b*, pygidium; 14 *c*, hypopygium.)

Cerceris semipetiolata, Saussure, Reise d. Novara, Hymen. p. 88 (♂)[1].

Hab. Mexico, Orizaba[1], Cordova (*coll. Saussure*).

The clypeus in the female is broadly and roundly convex; the apex sharply oblique, and bearing two leaf-like expansions as in *C. mexicana*; the eyes are parallel; the hinder ocelli are separated from the eyes by the length of the third antennal joint, and from each other by less than the length of the fourth joint; the head is coarsely punctured; the clypeus and cheeks are densely covered with silvery hair; the petiole is slightly shorter than in the male, but still longer than broad; the pygidial area is not narrowed at the base, and but slightly so towards the apex; the surface is transversely rugose; the incision in the hypopygium does not reach to the middle, and is somewhat longer than wide. The cheeks in the middle are pale yellow; the clypeal plates being also of this colour.

The clypeus in the male is broadly convex in the middle; the apex is transverse, with a very small tooth in the centre. In both sexes the antennæ are rufous beneath, the apical joint being entirely rufous.

In having the apex of the middle part of the clypeus divided into two leaf-like expansions, this species agrees with *C. mexicana* and *C. huastecæ*; but the clypeus is more roundly convex, the apex, too, being more sharply oblique so as to be almost hidden when looked at directly from the front; the petiole, also, is longer.

18. **Cerceris zapoteca.**

Cerceris zapoteca, Saussure, Reise d. Novara, Hymen. p. 89 (♂)[1].

Hab. Mexico, Tampico[1].

d. *Clypeus* (♀) *raised in the centre, usually flat, but not or hardly free from the sides.*

19. **Cerceris obsoleta.** (Tab. VII. figg. 15, ♀; 15 *a*, pygidium; 15 *b*, hypopygium.)

Clypei pars media convexa, margine apicali leviter emarginato; oculorum margines fere paralleli; area cordiformis læva, margine laterali foveato; nigra, maculis duabus scutelli, metanoto, apice abdominisque 1° et 3° segmentis, flavis; alis fortiter fumatis. ♀.

Long. 9–10 millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Eyes parallel. Ocelli not forming a triangle, and separated from the eyes by fully the

length of the second and third antennal joints united, and from each other by the length of the third. Clypeus broadly convex, projecting, and narrowed towards the apex, the apex with a rounded shallow incision, the sides rounded. Antennal tubercle acutely pointed, wider towards the apex. Punctuation of the head coarse, especially on the vertex; the hair on the vertex longish and sparse; the pubescence on the face and oral region close and silvery. Third antennal joint hardly one quarter longer than the fourth, and shorter than the first. Thorax very coarsely punctured; the oblique furrow on the mesonotum obsolete; the heart-shaped area of the median segment not defined, except by six large oblong foveæ, which are only separated from the punctures of the median segment itself by their larger size. Median segment with a gradually rounded slope, without a clearly-defined furrow, and the punctures on it much larger than those on the mesonotum. Abdomen strongly punctured throughout; the petiole much wider than long. Pygidial area rugosely punctured, particularly at the base, wider at the apex than at the base, the latter transverse, the former roundly projecting in the middle; the sides have large, widely separated punctures. The incision in the apical ventral segment is narrowed, reaches to near the basal third of the segment, and is rounded at the base; the lateral teeth are stout. The flagellum is reddish-fulvous beneath; the inner orbits of the eyes, two lines on the pronotum, a mark on either side of the scutellum, the metanotum, a band on the petiole, and another on the apex of the third segment, yellow. The femora, tibiæ, and tarsi are obscure fuscous-yellow in front.

20. **Cerceris montivaga.** (Tab. VII. fig. 16, ♀.)

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Closely related to *C. obsoleta*, but smaller (7 millim.); the central part of the clypeus is broader, flatter, and not so much narrowed towards the apex; the clypeus and cheeks are densely covered with silvery pubescence, which hides the surface completely; the scape is clear yellow beneath; the punctuation of the head is much closer; the heart-shaped area of the median segment is aciculate and wants the foveæ; the pygidial area is longer and narrower, and not narrowed at the base; the incision in the hypopygium is very much shorter, this being not much longer than broad; the second segment is broadly yellow, the third segment without yellow, and the fourth narrowly lined with it. In other respects agreeing with *C. obsoleta*.

21. **Cerceris smithiana.** (Tab. VII. figg. 17, ♀; 17 *a*, head; 17 *b*, clypeus; 17 *c*, pygidium; 17 *d*, hypopygium.)

Long. 8 millim.

Hab. Mexico, Atoyac in Vera Cruz (*H. H. Smith*).

♀. Eyes a little converging beneath. Hinder ocelli separated from the eyes by nearly the

length of the second and third antennal joints united, and from each other by the length of the fourth. Middle of the clypeus projecting gradually, and becoming narrowed to the apex, broader than long; the apex with three minute, blunt, indistinct teeth. The entire head (including the clypeus) coarsely and strongly punctured; the cheeks slightly and the sides of the clypeus densely covered with fulvous-silvery pubescence. Mesonotum coarsely longitudinally punctured; the pleuræ and median segment with larger, rounder, deeper, and more clearly separated punctures, the longitudinal furrow in the mesopleuræ distinct; the heart-shaped area finely transversely striated, widely furrowed down the centre. Abdomen covered almost uniformly with large punctures. Pygidial area elongated, hardly narrowed at the base, but becoming gradually narrowed to the apex; the surface opaque, apparently alutaceous; the lateral hair-fringe black. The incision in the hypopygium wide, but longer than broad, reaching to the middle. Antennæ subclavate, the third joint about one half longer than the fourth. Tibiæ and tarsi covered with a silvery pubescence; the tibial spines cream-coloured. Wings smoky, much darker in the fore half; the stigma dark fuscous; cubitus with the nervures curved; the recurrent nervure received shortly before the middle. The antennæ are rufous beneath, the apical joint being also rufous above. There is a yellow line along the middle of the eyes on the inner side; a complete line on the pronotum, sometimes a mark on the pleuræ beneath the tegulæ, the scutellum, metanotum, a mark on either side of the heart-shaped area, a broad band on the petiole, a band on the second segment (much wider at the sides), a narrow line on the fourth segment, a still narrower one on the fifth, and a line on the second ventral segment, yellow; the four anterior knees and tibiæ in front and the tarsi are rufo-testaceous.

A near ally of *C. montivaga*; the middle of the clypeus becomes very distinctly narrowed towards the apex, the raised part, too, being longer, and not covered densely with silvery pubescence; the wings are much darker coloured; the heart-shaped area of the median segment is striated; the pygidial area is longer and narrower; and the metanotum and median segment are marked with yellow.

22. **Cerceris subpetiolata.** (Tab. VII. figg. 18, clypeus, ♀; 18 *a*, pygidium; 18 *b*, hypopygium).

Cerceris subpetiolata, Saussure, Reise d. Novara, Hymen. p. 95 (♂ ♀)[1].

Hab. Mexico, Tampico [1], Eastern Cordillera [1], Atoyac in Vera Cruz (*H. H. Smith*); Guatemala, San Gerónimo (*Champion*).

I give a renewed description:—

Clypei pars media fere libera, margine apicali bidentato; oculorum margines paralleli; area cordiformis fere aciculata, sparse punctata; nigra, apice segmento secundo, basique tarsorum flavis; alis fusco-hyalinis, antice fortiter fumatis.

Long. 11 millim.

Eyes parallel. Ocelli not forming a triangle, separated from the eyes by nearly the

length of the second and third antennal joints united, and from each other by less than the length of the third joint. Clypeus subconvex, the sides projecting, especially at the apex, straight, and continued as stout teeth beyond the apex. Antennal tubercle elongate, sharply pointed, depressed at the base and apex; third antennal joint one quarter longer than the fourth. Head coarsely punctured, large, well developed behind the eyes, sparsely covered with long pale hair; the oral region thickly clothed with silvery pubescence. Thorax subopaque, clothed with short pubescence, strongly punctured; mesosternum with a stout tooth projecting obliquely backwards, and there is a short tubercle in front of it, and a blunt tooth at the apex. Median segment with a gradual rounded slope, the heart-shaped area semiopaque, bearing a few large punctures laterally, and with a shallow crenulated furrow in the centre. Petiole longer than broad, gradually bulging out slightly in the middle, and clearly separated from the second segment. Contraction at the apex of the second segment wide. Pygidial area elongate, narrow, of nearly equal width at the base and apex, bearing large punctures, irregularly transversely striolate, and covered with fuscous depressed pile; the apex is rounded; the sides bear large punctures, and are fringed with stout pale projecting hairs; beneath, the ventral segment is carinate in the middle, incised at the apex, and projects into stout converging teeth. The punctuation on the abdomen is strong; the pubescence is sparse, except on the apical segment. The base of the mandibles and the scape beneath are yellow; the flagellum beneath and the basal three joints of the antennæ above are rufous. The anterior and middle tibiæ are obscure white in front; the spines and metatarsus are white; the spurs and claws are rufous. The second abdominal segment beneath is for the greater part yellowish-white; the sides and apex above, a narrow line on the apex of the fourth, and an obscure line on the fifth segment are yellow.

The flat, not rounded, centre of the clypeus, with the apex transverse and toothed (or at least projecting), distinguishes this species from its allies; the toothed mesosternum separates it from *C. obsoleta*, &c.

Apparently not uncommon.

23. **Cerceris truncata.** (Tab. VII. figg. 19, head, 19 *a*, clypeus, 19 *b*, pygidium, 19 *c*, hypopygium, ♀; 20, head, 20 *a*, pygidium, 20 *b*, hypopygium, ♂.)

Clypei pars media libera, margine apicali truncato; oculorum margines fere divergentes; area cordiformis aciculata; macula clypeo, oculorum orbitis, maculis duabus scutello, metanoto, maculis tribus segmento mediali, abdominisque segmentis 1°, 2° et 4° margine apicali flavis; alis fuscis, anticis fortiter fumatis. ♀.

Long. ♀ 11, ♂ 8 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

Eyes slightly diverging beneath. Hinder ocelli separated from the eyes by a little more than the length of the third antennal joint, and from each other by the length of the fourth. Head rugosely punctured, the face not quite so strongly as the vertex. Clypeus free at the apex, not projecting very much, the apex truncated, the projecting

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part broader than long. Third antennal joint more than one-half longer than the fourth, and nearly as long as the first. Thorax strongly punctured; the propleuræ rugosely punctured; mesopleural furrow indistinct; the heart-shaped area aciculate, the central furrow crenulated; the median segment with a semiabrupt rounded slope. Abdomen hardly longer than the head and thorax united, rugosely punctured; the petiole bulging out roundly. Pygidial area elongated, narrow, bulging out from the base to near the middle, then narrowing to the apex, which is rounded, and about half the width of the base; the surface coarsely aciculate, the base rugose, with a few large punctures. The incision in the hypopygium not reaching near to the middle, wide, longer than broad, rounded at the base. The base of the mandibles, the inner orbits of the eyes, a mark on the clypeus, an interrupted line on the pronotum, an irregular mark below the tegulæ, a mark on either side of the scutellum, the metanotum, two large marks on the median segments, a broad band on the petiole, a narrower band on the second segment, a still narrower one on the fourth segment, yellow. On the mesopleuræ is a stout yellow projecting spine. Anterior and intermediate femora at the apex and the tibiæ and tarsi in front obscure yellowish-white.

The male has the clypeus convex, the middle projecting, truncated; the pygidial area aciculate, the basal half with large punctures, the apex rounded, a little narrower than the base, the sides with a distinctly raised border; and the hypopygium keeled in the middle. The clypeus is entirely black; the lateral plates yellow. Otherwise coloured as in the female.

In having the mesopleuræ spined, *C. truncata* agrees with *C. semipetiolata*; but the front spine is much longer and straighter, the clypeus is not toothed at the apex, and the colour is different, the median segment being marked with yellow.

e. *Clypeus* (♀) *completely free, projecting, truncated, or transverse at the apex.*

24. **Cerceris imperialis.** (Tab. VII. figg. 21, ♀; 21 *a*, clypeus, 21 *b*, pygidium, 21 *c*, hypopygium, ♀; 21 *d*, apex of clypeus, 21 *e*, hypopygium, 21 *f*, pygidium, ♀, var.)
Cerceris imperialis, Saussure, Reise d. Novara, Hymen. p. 98, t. 4. fig. 56[1].

Hab. Mexico, Acapulco in Guerrero (*H. H. Smith*), Eastern Cordillera[1].

We give a renewed description from Mr. Smith's specimens:—

Clypei pars media late libera, margine apicali late emarginato, fere dentato; oculorum margines paralleli; area cordiformis nitida, lævis; nigra, clypeo, oculorum marginibus, scutello maculis duabus, metanoto, maculis duabus segmento mediali, abdominisque segmentis margine apicali, flavis.
Long. 16 millim.

Eyes slightly diverging beneath. Posterior ocelli separated from the eyes by more than the length of the second and third antennal joints united, and by the length of the fourth from each other. Clypeus porrect, slightly broader than long, the apex with a wide rounded emargination. Antennal tubercle broadly compressed, the top

with a sharp edge; third antennal joint fully one quarter longer than the fourth. On the top of the head the punctuation is moderately strong; the face and clypeus is more finely punctured and coarsely aciculate. Punctuation of the mesonotum coarse and running into reticulations; on the pleuræ the punctures are more widely separated, still more so on the median segment, where they are also larger. The heart-shaped area impunctate, the sides foveolate-striolate. Median segment with a rather abrupt slope. The oblique furrow on the mesopleura is wide and deep. Abdomen longer than the head and thorax united. Petiole somewhat longer than wide, shining, and bearing widely separated punctures; the punctuation of the other segments strong at the base, becoming gradually weaker towards the apex. Pygidial area coarsely rugose, opaque; the lateral hair-fringe dense, longish, stout, and rufous; the apex rounded. Penultimate and antepenultimate ventral segments densely covered with long, close, fulvous, soft hair; the bristles on the last segment long, dense, and fulvous. The inner orbits of the eyes broadly, the clypeus (except the apical tips), a mark behind the eyes, two lines on the pronotum, a mark on either side of the scutellum, the metanotum, a broad, elongate mark on the side of the median segment extending nearly from the base to the apex, the sides (broadly) and the apex of the petiole, a narrow line on the second abdominal segment, a broader one on the third, and the greater part of the fourth and fifth segments, yellow. The anterior and middle tibiæ and tarsi (except an irregular black line on the former behind) and the knees rufo-testaceous; the hinder tarsi obscure testaceous at the base and apex. Spurs and spines fulvo-testaceous.

An example from Temax, Yutacan (*Gaumer*), has the marks on the median segment much reduced, only commencing at the middle, and the petiole and the third segment only marked with yellow; the projecting middle of the clypeus appears shorter and has the incision shallower; the head looks smaller; the antennæ are not rufous at the base; and the four front tibiæ and tarsi are fuscous-black. Our figures 21*d*–21*f* are taken from this specimen.

25. **Cerceris exsecta.**

Cerceris exsecta, Smith, Ann. & Mag. Nat. Hist. 4th ser. xii. p. 410[1].

Hab. Mexico[1].

This agrees so closely with *C. imperialis* in coloration and in the form of the clypeus that I have no doubt the two will prove to be conspecific. *C. imperialis,* it may be added, shows considerable variation in the colour of the legs and abdomen.

26. **Cerceris esau.** (Tab. VIII. figg. 1, head 1 *a*, apex of clypeus, 1 *b*, pygidium, 1 *c*, hypopygium, ♂.)

Cerceris esau, Schletterer, Zool. Jahrb. ii. p. 458[1].

Hab. Mexico, Cuautla[1].

This well-marked species is a close ally of *C. curvicornis*, but is larger and stouter, and, if anything, more pilose; the apex of the clypeus (comparing the males) is transverse, with a tooth in the centre; the terminal antennal joint is not hooked; the scutellum and metanotum are not yellow; the hind tibiæ are without black, &c.

27. **Cerceris acolhua.** (Tab. VIII. figg. 2, head; 2 *a*, apex of clypeus; 2 *b*, pygidium; 2 *c*, hypopygium; 2 *d*, antenna, ♂.)

Cerceris acolhua, Saussure, Reise d. Novara, Hymen. p. 90 (♂)[1].

Hab. Mexico, Chapultepec[1].

28. **Cerceris curvicornis.** (Tab. VIII. figg. 3, antenna, ♂; 3 *a*, male organ.)

Nigra, dense fusco-pilosa, facie, scapo subtus, linea pronoto, scutello, metanoto, maculis 2 parvis petiolo, abdominis segmentis marginibus pedibusque flavis; femoribus tibiisque posticis nigris; flagello antennarum fulvo; alis fumato-hyalinis, apice fusco, nervis stigmateque croceis.

Long. 15 millim.

Hab. Mexico, Presidio de Mazatlan (*Forrer*).

Very similar in coloration and size to *C. acolhua*. It differs, however, in having a yellow wedge-shaped mark over the antennæ; the scutellum yellow; the hind tibiæ black, broadly yellow at the base; the antennæ fulvous beneath; the band on the pronotum almost complete; the entire head and body much more densely covered with long fuscous hair, and also more opaque and much more strongly punctured, especially the thorax and abdomen; the apex of the clypeus instead of having a round broad lobe in the centre is there much narrower, being almost tridentate; the hinder ocelli separated from each other by almost a greater distance than they are from the eyes (the opposite being the case in *C. acolhua*); the wings at the apex much more clearly infuscated; the heart-shaped area of the median segment coarsely punctured, not striolate; and, lastly, the terminal antennal joint much more deeply curved or hooked, and longer than the penultimate. The eyes are parallel and broader than in *C. acolhua*, the face in *C. curvicornis* being thus narrower.

29. **Cerceris hebes.** (Tab. VIII. figg. 4, ♂; 4 *a*, antenna, ♂; 4 *b*, clypeus; 4 *c*, pygidium; 4 *d*, hypopygium.)

Long. 12–13 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Eyes slightly diverging beneath. Ocelli almost in a triangle; the posterior pair separated from the eyes by about the length of the second and third antennal joints united, and by a slightly greater distance from each other. Clypeus flat, slightly hollowed in the middle near the apex, which is produced into a broad triangular blunt point. Antennal tubercle acute, the broad part at the apex. The third antennal

joint not much longer than the fourth and about two-thirds longer than the second. Head coarsely, rugosely punctured; the face with a finer punctuation; the middle of the clypeus at the apex impunctate. Thorax coarsely, rugosely punctured, the pleuræ not so coarsely; median segment short, with a gradual slope to the apex, the middle with a broad smooth furrow; the heart-shaped area rugosely punctured laterally, the centre smooth and furrowed. Abdomen rugosely punctured, the punctures large; the depressed band at the apex of the segments sericeous, aciculate. Pygidial area a little longer than broad, shield-shaped, the sides rounded and bulging out; the apex almost truncated, slightly projecting at the corners; the base rounded. Ventral surface punctured; the apex of the penultimate segment projecting at the tip. The scape entirely and the flagellum of the antennæ beneath are rufous. The clypeus, the cheeks, the inner orbits of the eyes (the sides of the clypeus above are bordered with black), the antennal tubercle at the apex, a small spot on the vertex behind the eyes, two lines on the pronotum, two marks on the scutellum, the metanotum, a broad line on the edges of the median segment, a line on either side of the petiole, a band on the apex of the abdominal segments, and the pygidial area (entirely), yellow. The greater part of the hinder coxæ and trochanters, a line on the femora, the knees, tibiæ (except a black line behind), and tarsi and spurs, yellow; the spines white.

30. **Cerceris azteca.** (Tab. VIII. figg. 5, head; 5 *a*, clypeus; 5 *b*, pygidium; 5 *c*, hypopygium.)

Cerceris azteca, Saussure, Reise d. Novara, Hymen. p. 97 (♀).

Hab. Mexico (*coll. Saussure*), Orizaba [1], Yautepec [1], Cuautla [1].

This is a smaller species than *C. tepaneca*, and may be known from it by the incised middle of the clypeus, the smooth heart-shaped area, the two marks on the scutellum, the apex of the petiole marked with yellow, the lighter coloured wings, fuscous stigma, &c.

31. **Cerceris tepaneca.** (Tab. VIII. figg. 6, clypeus, ♂; 6 *a*, head, 6 *b* & 6 *c*, clypeus, ♀.)

Cerceris tepaneca, Saussure, Reise d. Novara, Hymen. p. 90 (♂) [1].

Hab. Mexico, Presidio de Mazatlan (*Forrer*), Orizaba [1], Atoyac in Vera Cruz (*H. H. Smith*).

We give a renewed description of this species:—

Clypei pars media fere convexa, libera, longis, margine laterali paralleli, margine apicali truncato; oculorum margines paralleli; area cordiformis opaca, striolata; nigra, clypeo, oculorum marginibus, metanoto, abdominis segmentis 2° et 3° apicibus, 4° et 5° fere totis, flavis; pedibus rufo-fulvis, basi nigris; alis flavo-hyalinis, violaceis, costa stigmateque fulvis.

Long. 11 millim.

Eyes slightly diverging. Ocelli separated from the eyes by a little more than the length of the third antennal joint, and by a slightly less distance from each other. Middle of the clypeus porrect, reaching below the labrum, longer than broad, convex, the apex truncate, rounded at the edges. Antennal tubercle reaching to the clypeus, acutely edged. Head coarsely rugose, the face and clypeus with scattered punctures. Third antennal joint one half longer than the fourth. Cheeks bearing silvery-fulvous pubescence. Thorax short, not much more than twice the length of the head; coarsely punctured; prothorax large, broad. Median segment with a rather steep rounded slope; the heart-shaped area acutely triangular, opaque, granular, obliquely longitudinally striolated. Punctuation of the median segment very coarsely rugose. The oblique furrow on the mesopleura indistinct. Petiole broader than long; punctured strongly. Punctuation of the abdominal segments moderate, and becoming weaker towards the apex. Pygidial area coarsely rugose, of nearly equal width throughout; the sides with large separated punctures; the lateral hair-fringe short, pale testaceous. The incision in the hypopygium wide, longer than broad, rounded at the base. The inner orbits of the eyes broadly, the clypeus (except round the edges), the metanotum, a narrowish band on the apex of the second and third segments, the greater part of the fourth and fifth segments and the sides of the apical one, and the apical three segments broadly at the sides beneath, yellow. Legs fulvous, the coxæ, trochanters, and the greater part of the femora black.

32. **Cerceris erythropoda.** (Tab. VIII. figg. 7, head; 7 *a*, clypeus; 7 *b*, pygidium; 7 *c*, hypopygium.)

Nigra, facie, thorace abdomineque flavo-maculatis; pedibus fulvo-rufis, basi nigris; alis fere hyalinis, apice fumatis, stigmate ochraceo; clypeo elevato, libero, apice truncato. ♀.

Long. 10·5 millim.

Hab. Mexico, Cordova (*coll. Saussure*).

Eyes parallel, distinctly margined behind; hinder ocelli separated from the eyes by fully the length of the third antennal joint and from each other by a slightly less distance. Punctuation of the head moderately coarse. Clypeus obliquely porrect; longer than broad, narrowed slightly towards the apex, which is almost transverse. Thorax with the punctures wide apart; those on the median segment somewhat larger. The heart-shaped area of the median segment longitudinally striated laterally; furrowed down the centre, which is aciculate. Petiole broader than long, bearing scattered punctures; the second and third segments punctured like the mesonotum, but with the punctures smaller; the punctures on the other segments smaller and closer. Pygidial area straight, slightly narrowed towards the apex, the surface irregularly reticulated; the lateral hair-fringe sparse. The incision in the hypopygium longer than broad, rounded at the base, reaching near to the middle. Legs but slightly haired; the hinder tibiæ coarsely serrate. Cubitus oblique, angled broadly beneath; the recurrent nervure

received in the middle. The following parts are pale yellow : the clypeus, the cheeks, the antennal tubercle, a small spot behind the eyes, an interrupted line on the pronotum, the tegulæ, the metanotum, two large marks on the median segment, a mark on either side of the petiole, a line (narrowed in the middle) on segments 2–5, and a spot on the side of the third and fourth ventral segments. The legs are fulvous-red, except the coxæ, the trochanters, and the base of the femora.

33. **Cerceris bicornuta.** (Tab. VIII. figg. 8, head, 8 *a*, pygidium, 8 *b*, hypopygium, ♀ .)

Cerceris bicornuta, Guér. Icon. du Règn. Anim. p. 443 ; Cresson, Proc. Ent. Soc. Phil. v. p. 117 [1] ; Saussure, Reise d. Novara, Hymen. p. 100, t. 4. fig. 58 [2].

Hab. North America [2], from New York to Louisiana [1].—Mexico [2].

The female only appears to be known of this species.

34. **Cerceris rostrata.**

Cerceris rostrata, Smith, Ann. & Mag. Nat. Hist. 4th ser. xii. p. 409 [1].

Hab. Mexico [1].

Smith describes the female only of this species. In coloration, it comes very near indeed to *C. simulans*, of which the male only is known ; but I think it very probable that *C. rostrata* will prove to be its female. Smith [1] describes the clypeus as "elevated and narrowed at half its length to a point."

35. **Cerceris bothriophora.**

Cerceris bothriophora, Schletterer, Zool. Jahrb. ii. p. 456 [1].

Hab. Mexico [1].

36. **Cerceris chrysogastra.**

Cerceris chrysogastra, Schletterer, Zool. Jahrb. ii. p. 458 [1].

Hab. Mexico, Orizaba, Cuernavaca [1].

37. **Cerceris trichiosoma.**

Clypeo ovato, subconvexo, margine apicali producto ; oculorum margines fere paralleli ; area cordiformis rugosa ; nigra, longe pilosa, facie, abdominis segmentis 1°, 3°–6^{m} marginibus apicalibus metanotoque flavis ; alis fumato-hyalinis, antice fuscis, costa stigmateque sordide fulvis. ♂.
Long. 10 millim.

Hab. Mexico, Ciudad in Durango 8100 feet (*Forrer*).

Antennæ with joints 3–7 fulvous beneath ; the third joint as long as the first, and fully one quarter longer than the fourth. Eyes almost parallel. Ocelli almost in a triangle ; the posterior pair separated from the eyes by a little more than the length

of the third antennal joint and by a somewhat less distance from each other. Clypeus convex, ovate; the apex produced into a blunt tooth in the middle. Antennal keel sharply pointed, hardly reaching to the base of the clypeus. The entire head is coarsely and strongly punctured; below the antennæ and the orbits, a little above the antennæ, yellow; covered with long pale fuscous hair. Thorax coarsely punctured throughout, except on the metanotum; closely covered with rather long pale hair; black, except two widely separated lines on the pronotum and the metanotum, which are yellow. Abdomen elongate, narrow, longer than the head and thorax united, not quite so strongly punctured as the thorax, and with the pilosity much shorter. Pygidial area sparsely punctured, aciculate; the sides distinctly keeled, narrowed somewhat towards the base. Tibiæ and tarsi yellowish in front; the hinder pair more or less black in front; the calcaria yellow; the hinder tibiæ greatly attenuated at the base; the four hinder coxæ and trochanters yellow beneath.

Very similar in the form of the body to *C. pilosa*, but smaller; the antennæ shorter and thickened towards the base; the apex of the clypeus toothed; the median segment wanting the yellow marks, its area being rugose, &c

38. **Cerceris pilosa.** (Tab. VIII. figg. 9, ♂; 9 *a*, clypeus; 9 *b*, pygidium; 9 *c*, hypopygium.)

Long. 13 millim. ♂.

Hab. Guatemala, San Gerónimo (*Champion*).

Eyes almost parallel. Ocelli separated from the eyes by the length of the fourth antennal joint, and by a little less distance from each other, not forming a triangle. Clypeus convex, depressed towards the apex; the extreme apex flat, broadly and roundly projecting in the middle; the lateral projection broad, depressed in the centre. Antennal tubercle small, narrow. Antennæ of nearly uniform thickness; the joints oblique at the apex; the third joint hardly one quarter longer than the fourth. Punctuation of the head coarse, deep. Thorax somewhat more strongly punctured than the head; the heart-shaped area impunctate, furrowed down the middle; the bordering furrow finely crenulated. Median segment with a gradually rounded slope. Abdomen longer than the head and thorax united, narrow; rather strongly punctured; the petiole longer than broad, narrowed at the apex. Pygidial area opaque, aciculate, bearing large, separated punctures, bulging out gradually at the middle; the apex transverse; the sides with coarse punctures. The clypeus, the inner orbits of the eyes, the projecting edges, a line on either side of the pronotum, the tegulæ, a mark on either side of the scutellum, the metanotum, a broad irregular mark on the side of the median segment, the apex of the petiole broadly, a narrower band on the abdominal segments 3–5, the anterior and middle tibiæ and tarsi, the knees, the hinder trochanters, and the spurs, yellow; the tibiæ lined with black behind.

39. **Cerceris scapularis.**

Cerceris scapularis, Schletterer, Zool. Jahrb. ii. p. 457 [1].

Hab. Mexico, Orizaba [1].

40. **Cerceris thermophila.**

Cerceris thermophila, Schletterer, Zool. Jahrb. ii. p. 463 [1].

Hab. Mexico [1].

41. **Cerceris graphica.**

Cerceris graphica, Smith, Ann. & Mag. Nat. Hist. 4th ser. xii. p. 410 (♀) [1].

Hab. Mexico [1].

Smith describes the female, but nothing is said about the form of the clypeus. The "abdomen ferruginous, with yellow band" and the "legs ferruginous, with yellow tarsi" appear to separate it from any of the species known to me.

42. **Cerceris sonorensis.** (Tab. VIII. fig. 10, ♂ organ.)

Nigra, facie, linea pronoti, metanoto, pedibus lineisque abdominis segmentis, flavis; antennis rufis et flavis; alis hyalinis, antice fulvo-fumatis, stigmate fulvo. ♂.

Long. 12 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

Head large, wider than the thorax, closely and rather strongly punctured, and covered with long pale hair. The cheeks, clypeus, mandibles (except at the apex), the space between the antennæ, and a short distance up on either side of them, yellow; there is a small irregular mark at the top of the head behind, and nearly touching the eyes. The thorax is shining and punctured like the head, and covered with long pale hair; there is a large mark (broadest behind) at the apex of the anterior coxæ, and a small mark in front of the four hinder coxæ. The heart-shaped area of the median segment is defined, but does not differ much in punctuation from the rest of the segment, and is furrowed down the middle. The abdomen is much more feebly punctured than the head, the depressions aciculate, and it is covered with pale hair. The yellow band (rufo-fulvous in the specimen, probably through discoloration by cyanide of potassium) on the second segment is wider and larger than that on the other segments, and has a broad incision in the middle in front. The two basal ventral segments are for the greater part yellow. The yellow of the legs is intermixed with fulvous; the second to the fourth tarsal joints are marked with fuscous. The cloud in the wings commences from the apex of the stigma and extends to the cubital cellules. The joints 7–11 of the antennæ are marked with black above; the third joint is about as long as the fourth and fifth united; the last joint is curved. The third transverse cubital cellule is received at the apex of the radial cellule.

EUCERCERIS.

Eucerceris, Cresson, Proc. Ent. Soc. Phil. v. p. 104 (1865).

Eucerceris has, according to Cresson, "the third cubital cellule very large, subquadrate, scarcely narrowed towards the radial cellule, and extending beyond it, and without a sinus between them; the second cubital cellule triangular, sometimes petiolate in the female; the radial cellule obtusely truncate at the apex; the first abdominal segment narrowed as in *Cerceris*; and the neuration of the anterior wings generally dissimilar in the sexes." I feel inclined to regard it as a subsection of *Cerceris*. Fifteen North-American species are known.

1. **Eucerceris cerceriformis.**

Nigra, facie, linea pronoti, linea scutelli, metanoto, abdominis segmentis marginibus, maculisque 2 segmento mediali, albidis; pedibus fulvis, geniculis tibiisque anterioribus albis; alis hyalinis, anticis fumatis, stigmate ochraceo. ♀.

Long. 10 millim.

Hab. MEXICO (*coll. Saussure*).

Antennæ with the flagellum brownish beneath, gradually thickened towards the apex; the third joint somewhat longer than the first, and nearly four times the length of the second. Head shining, closely and not very strongly punctured; from below the ocelli it is entirely whitish-yellow, and there is an elongated mark behind the eyes; a black elongated fossulet above the eyes, and a short furrow between these fossulets; ocelli separated from the eyes by somewhat less than the length of the third antennal joint; apex of the clypeus broadly rounded; eyes diverging a little below. Thorax rather strongly punctured; the pleuræ rugose, the heart-shaped area of the median segment transversely striated, widely furrowed down the centre; a broad line on the pronotum, the tegulæ, the tubercles, a mark behind them, a broad complete line at the base of the scutellum, the metanotum, two large marks on the median segment, and a broad band on the abdominal segments, yellowish-white. Abdomen shining, bearing scattered punctures; the pygidial area with some large punctures at the base, its sides curved, hollowed, ending as stout, somewhat triangular, teeth, and with a few large widely separated punctures; incision in the hypopygium short; there is a depression in the centre of the antepenultimate segment, and a row of stiff longish bristles at its base.

PHILANTHUS.

Philanthus, Fabricius, Ent. Syst., Suppl. p. 268 (1793); Syst. Piez. p. 301.
Simblephilus, Jurine, Nouv. Méth. de Class. les Hymén. p. 185 (1807).
Trachypus, Klug, in Ges. naturf. Fr. Berl. Mag. iv. p. 41 (1810).
Anthophilus, Dahlbom, Hymen. Eur. i. p. 496 (1845).
Philanthocephalus, Cameron, anteà, p. 86.

A genus somewhat numerously represented in the Nearctic Region, but apparently possessing fewer species in the Neotropical.

A. *Abdomen sessile.*

1. **Philanthus vertilabris.** (Tab. VIII. fig. 11, ♂.)

Philanthus ventilabris, Fabr. Ent. Syst., Suppl. p. 268; Cresson, Proc. Ent. Soc. Phil. v. p. 98[1].
Philanthus vertilabris, Fabr. Syst. Piez. p. 303; Coqueb. Ill. Icon. p. 96, t. 22. fig. 2; Say, Amer. Ent. p. 112, t. 49. fig. 2.
Anthophilus vertilabris, Dahlb. Hymen. Eur. i. p. 497.

Hab. North America, United States[1].—Mexico, Atoyac in Vera Cruz (*Schumann*).

2. **Philanthus xanthostigma.** (Tab. VIII. figg. 12, ♀; 12 *a*, pygidium; 12 *b*, hypopygium.)

Niger, facie, metanoto, abdominis segmentis 2°, 4°–6^m^ fere toto, tibiisque anticis flavis; alis hyalinis, costa et stigmate fulvis. ♀.
Long. 9 millim.

Hab. Mexico (*Sallé*), Chilpancingo 4600 feet, Dos Arroyos 1000 feet, Venta de Zopilote 2800 feet, all in Guerrero (*H. H. Smith*); Guatemala, San Gerónimo (*Champion*).

Eyes parallel on the lower side. Ocelli in a triangle; the hinder ocelli separated from the eyes by the length of the third antennal joint, and from each other by a little more than the length of the fourth. Clypeus but slightly convex; the apex distinctly and completely margined, broadly roundly projecting, flat. Head rugosely punctured; a shining, impunctate space on the vertex near the top; the clypeus and face with scattered punctures; antennal tubercle flat; the face and oral region, the orbits broadly to the top of the antennal tubercle, and the greater part of the mandibles, yellow; a small quadrate spot between (and above) the antennæ, and an obscure fulvous spot behind the eyes. Antennæ short, stout, perceptibly thickened towards the apex; the scape yellow; the flagellum more or less fulvous beneath; the third joint thinner than the fourth (especially at the base), and nearly twice its length. The hair on the head is longish, moderately thick, and silvery-white. Thorax shining; the mesonotum with large, deep, scattered punctures; the pleuræ coarsely rugosely punctured; the median segment closely transversely punctured; the triangular area punctured at the base and along the sides, the rest shining and impunctate, and with a wide furrow in the middle, which does not reach much beyond the base of the impunctate part. Median segment and pleuræ covered with short, soft, pale hair; the median segment roundly curved. Prosternum elongate, placed much lower than the top of the pronotum. Abdomen shining, almost glabrous at the base, covered with large, deep, widely separated punctures. Pygidial area subtriangular, smooth, shining, sparsely punctured; laterally indistinctly keeled. A line on the pronotum, the tegulæ in front, the metanotum, a broad belt on the base of the second segment, a narrow one on the apex of the third, the fourth (except at the base and apex) and the other segments (entirely), yellow; beneath, the apical three segments are entirely yellow, and

there is a line and two lateral marks on the apex of the fourth. The knees, the tibiæ in front, the anterior tarsi in front, and the spurs are yellow; the spines are glistening yellowish-white.

The male has a rounded-triangular mark above the antennæ (the narrow end in front), a large mark (truncated and narrowed behind, and roundly incised in front) on the front, and the orbits of the eyes to the eye-incision yellow; otherwise coloured as in the female, except that the metanotum is black, and the yellow on the abdominal segments is much reduced. The antennæ are longer, subclavate. The triangular area is rugose throughout, and the furrow is obscured by the punctures.

3. **Philanthus maculifrons.** (Tab. VIII. fig. 13, ♂.)

Niger, capite maculis 9, linea pronoti, scutello, metanoto, geniculis, tibiis tarsisque flavis; alis fusco-hyalinis. ♂. Long. 10 millim.

Hab. Mexico, Jaral near Guanajuato (*Schumann*).

Ocelli in a triangle; the hinder ocelli separated from the eyes by the length of the first and second antennal joints united, and from each other by the length of the fourth, and in a deep pit. Clypeus with the apical half depressed obliquely inwardly; the apex broadly and roundly projecting. Antennæ subclavate; the third joint twice the length of the fourth. Head shining, rather strongly punctured, sparsely covered with long pale silvery hair. Thorax shining, sparsely haired, strongly punctured; the scutellum and metanotum impunctate; the median segment closely, strongly, transversely punctured, the basal area impunctate in the middle, its central furrow wide and crenulated, the apex suboblique. Abdomen nearly as long as the head and thorax united, shining, sparsely haired; the punctures large, deep, and widely separated, more particularly towards the apex. Pygidial area sparsely punctured. Petiole rising obliquely from the base, and becoming depressed again towards the apex; looked at sideways, forming a semicircular curve. A large mark on the clypeus (wide and roundly incised at the apex), a broad line (widest at the apex) along the eyes (having a small yellow mark below it, clearly separated by a narrow black line), a somewhat triangular mark over the antennæ, two marks behind the ocelli, a more elongate and larger mark behind the eyes, the edge of the pronotum, the tegulæ, the tubercles and a mark in front of them, the scutellum, the metanotum, a broad band on the base of the second segment, a narrower band on the apices of the third, fourth, and fifth segments, the sides of the sixth segment, a mark on the sides of the third and fourth ventral segments, and the scape, knees, tibiæ, and tarsi, yellow. The first recurrent nervure is received in the middle of the second cubital cellule, the cubital nervure being angled at this part; the second cubital nervure a little beyond the second transverse cubital nervure.

Very closely related to *P. xanthostigma*; but differing from it in having two marks behind the eyes, the scutellum, and metanotum yellow, the knees, tibiæ, and tarsi

entirely yellow, the wings distinctly suffused with fuscous, the face and clypeus much less strongly haired, the apex of the clypeus more sharply and obliquely depressed, and the head less developed behind the eyes, and more sharply retreating.

4. **Philanthus multimaculatus.** (Tab. VIII. fig. 14, ♂.)

Niger; capite et thorace flavo maculatis (mesonoto cum 2 lineis flavis), abdominis segmentis late pedibusque fere toto flavis; alis fulvo-hyalinis, costa et stigmate fulvis. ♂.
Long. 9 millim.

Hab. Mexico, Atoyac in Vera Cruz (*Schumann*).

Clypeus flat, rounded and margined at the apex; the lateral hair-fringe very long, the outer hairs reaching (when pressed) nearly to the centre of the clypeus. Ocelli in a triangle; the hinder ocelli separated from the eyes by hardly the length of the third antennal joint, and from each other by more than the length of the fourth. Third antennal joint more than twice the length of the fourth, and longer than the first. Head shining, the pile and punctuation sparse and not very strong. Thorax shining, sparsely punctured; the median segment closely transversely rugose, its apex sharply suboblique; there are two furrows on the mesonotum. Abdomen longer than the head and thorax united; sparsely covered with large, moderately deep punctures. Pygidial area with a few punctures. The head in front from a little below the ocelli, the mandibles (except at the base and apex), the scape and joints 3 and 4 of the antennæ beneath, a large mark (incised in front and projecting in the middle behind) behind the ocelli, an elongated line running from the vertex down the outer orbits, the pronotum broadly, a small mark on its sides, two broad lines in the centre of the mesonotum, a short line in front of the tegulæ, the tubercles and two spots (the interior the larger and more irregular) behind them, a large mark on the mesopleura, the tegulæ, the scutellum and a mark on either side of it, the metanotum, two oblique marks at the base of the median segment and a large one on the sides, the abdominal segments broadly above and beneath, the base of the coxæ, the apical half of the femora, and the tibiæ and tarsi, clear yellow. The first recurrent nervure is received before the middle of the cellule, the second near the base.

B. *Abdomen petiolate, impunctate.*

5. **Philanthus mexicanus.**

Trachypus mexicanus, Saussure, Reise de Novara, Hymen. p. 86 (♀)[1].
Philanthocephalus mexicanus, Cam. anteà, p. 89, Tab. VI. figg. 5, 5 *a*, *b* (♂), 6 (♀)[2].

To the Mexican localities given [2], the following has to be added:—Tampico [1].

6. **Philanthus punctifrons.**

Philanthocephalus punctifrons, Cam. anteà, p. 90, Tab. VI. figg. 7, 7 *a* (♂).

7. **Philanthus hirticeps.**

Philanthocephalus hirticeps, Cam. anteà, p. 87, Tab. VI. figg. 2, 2 *a*, *b* (♂).

8. **Philanthus maculiceps.**

Philanthocephalus maculiceps, Cam. anteà, p. 88, Tab. VI. figg. 3, 3 *a* (♂).

9. **Philanthus gracilis.**

Philanthocephalus gracilis, Cam. anteà, p. 88, Tab. VI. figg. 4, 4 *a*, *b* (♂).

Fam. MIMESIDÆ.

This is a small group, represented by two or three genera of wide distribution, but, so far as we know, of limited extent. Its chief peculiarities are:—The petiolated abdomen, the petiole being smooth and generally furrowed; the flagellum thickened towards the apex; the middle tibiæ with only one spur; and the wings with four cubital cellules, the recurrent nervures being received either in the second or in the second and third. The species are small, few of them exceeding 15 millim. in length, and are entirely black, or black with yellow markings.

MIMESA.

Mimesa, Shuckard, Essay on the Foss. Hymen. p. 228 (1837).

The distinctions between *Mimesa* and *Psen* become so vague, as regards the neuration of both the anterior and the posterior wings, that I can hardly regard them as distinct, and am strongly inclined to the opinion that they should be united. It is, however, possible that an examination of additional material from the tropics may reveal other generic characters than those afforded by the alar neuration; for the present, therefore, as a matter of convenience, I retain the convential genera. In all our species the inner spur of the hind tibiæ is dilated.

A. *Petiole gradually dilated at the apex, not furrowed laterally, the dilated part not abruptly separated from the rest.*

1. **Mimesa mexicana.** (Tab. VIII. fig. 15, ♀.)

Nigra; capite et thorace pallide hirtis, aciculatis; flagello antennarum subtus fulvo; abdominis segmentis 2° et 3° rufis; alis hyalinis. ♀.

Long. 8 millim.

Hab. Mexico, Milpas in Durango 5900 feet (*Forrer*).

Eyes parallel, strongly faceted. Ocelli in a triangle. Clypeus convex, broadly rounded, the margin depressed. Antennæ stout, thickened towards the apex, covered

with a hoary microscopic pile; the third joint slightly curved, nearly one quarter longer than the fourth, and almost as long as the space between the hinder ocelli and the eyes. Head finely, rugosely punctured, the top bearing long, erect, fuscous hairs; the face and vertex densely clothed with silvery, depressed hair. Thorax coarsely aciculated; the triangular area of the median segment strongly longitudinally striolated, the rest of the segment rugose; apex of the median segment with an oblique slope. Petiole with the basal half narrow, of equal width throughout, with a slight curve, not furrowed above or laterally; the sides with a distinct margin, the apex gradually dilated. The abdominal segments shining, impunctate; the middle and apical segments covered with a short pubescence. Pygidial area gradually narrowed from the base to the apex; above longitudinally rugosely punctured. The apex of the petiole, the second segment, and the third segment broadly at the sides ferruginous-red. Legs covered with a whitish pubescence; the spurs white; the inner spur of the posterior tibiæ thickened. Second cubital cellule narrowed above, not half the length of the third; the transverse cubital nervures straight; the first recurrent nervure received at half the length of the top of the second cubital cellule from the first transverse cubital, the second recurrent nervure at half the distance from the second cubital. Neuration of the posterior wings as in the typical species; the nervures faint towards the apex.

B. *Petiole abruptly dilated at the apex, longer than the thorax, laterally grooved.*

2. **Mimesa pulchra.** (Tab. VIII. fig. 16, ♀.)

Nigra, aurea, hirta, mesonoto punctato, antennarum dimidio basali, pedibus (basi nigra), tegulis, costa stigmateque fulvis; alis fulvo-hyalinis. ♀.

Long. 10 millim.

Hab. Mexico, Sierra de las Aguas Escondidas, Guerrero, 7000 feet (*H. H. Smith*).

Vertex shining, sparsely and slightly punctured, sparsely covered with short golden hairs; the rest of the head is so closely covered with golden hair that the surface is entirely hidden. Ocelli hardly forming a triangle; there is a narrow furrow behind them, and a much wider and deeper furrow runs obliquely from the posterior ocelli. Frontal furrow narrow and indistinct. Clypeus convex, the apex broadly rounded, almost transverse, a slight incision in its middle. Mesonotum opaque, closely and rather strongly longitudinally punctured; the scutellum shining, sparsely punctured. Pleuræ shining, impunctate. Triangular area of the median segment with irregular widely separated striæ or keels; the rest of the median segment irregularly rugosely reticulated. Metapleuræ shining, impunctate. The median segment is short, and rounded gradually. The pronotum, the mesopleuræ in front, and the median segment are densely covered with fulvous-golden, the rest of the thorax with shorter fulvo-fuscous, pubescence. Abdomen with the apices of the segments rufo-piceous; the

sides and apex covered rather densely with fulvous-golden hair. Petiole nearly as long as the thorax, curved, furrowed deeply above, and bearing rather long pale fulvous hair. Pygidial area elongated, sharply rounded at the apex, with a sharp stout keel in its centre. Legs stout; the coxæ and a line on the underside of the femora (that on the posterior pair broad) black; the femora sparsely, the tibiæ and tarsi densely, covered with whitish hair, that on the tibiæ erect and resembling bristles on the hinder edge. Metatarsus curved at the extreme base; the large spur of the tibiæ (which is dilated at the base) reaches to its middle. The second cubital cellule is a little more than half the length of the third; the first recurrent nervure is received in the middle of the cellule, the second at the apex.

3. **Mimesa striolata.** (Tab. VIII. fig. 17, ♀.)

Nigra, tarsis pallidis, flagello antennarum subtus fulvo; capite punctato; mesonoto striolato, segmento mediali reticulato; alis hyalinis, stigmate fusco. ♀.

Long. 10 millim.

Hab. Mexico, Amula 6000 feet, Omilteme 8000 feet, Chilpancingo 4600 feet, Xucumanatlan 7000 feet, all in Guerrero, Atoyac in Vera Cruz (*H. H. Smith*).

Eyes almost parallel. Ocelli in a triangle. Front broadly projecting between the antennæ, the projection broader than long. Clypeus convex; the apex almost truncated. There is a furrow behind the ocelli, and external to them a much wider one; a furrow also runs down from the ocelli to the antennæ. Front and sides of the vertex on either side of the ocelli finely rugosely punctured; behind the ocelli and along the top of the eyes almost impunctate. Below the antennæ the head is densely covered with silvery pubescence, hiding the surface, above them it is sparsely haired. Antennæ stout, slightly thickened towards the middle; the third joint not one quarter longer than the fourth; the joints 2–7 and the terminal one rufous, the others fuscous beneath. Thorax short, about twice the length of the head; mesonotum coarsely and closely striolated; scutellum striolated, intersected with punctures; mesopleuræ almost impunctate; median segment irregularly rugosely punctured, the base in the middle widely reticulated; there is a fringe of golden-silvery hair on the pronotum, and the sides of the median segment at the apex are densely covered with long silvery hair. The petiole is nearly as long as the thorax, narrow, shining, cylindrical, slightly curved, and bare, laterally deeply and widely furrowed; it is articulated to the lower part of the second segment. Abdomen shining, impunctate; the second and third segments slightly, the other segments densely, covered with rather long silvery pubescence. Pygidial area narrow, keeled down the middle, impunctate. Wings short; second cubital cellule a little narrowed at the top, receiving the recurrent nervures about the basal third and apical fourth, not half the length of the third cellule above and beneath; third transverse cubital nervure bent above the middle. In the hind wings the transverse median nervure is received beyond the

origin of the anal nervure. Legs short, pilose; the tibiæ without spines. The posterior spurs rather long, the outer spur curved, and, compared with the inner one, thicker at the base; they are pure white, and reach to the middle of the metatarsus.

The male has the antennæ longer, of more uniform thickness, and with the third joint not much longer than the fourth, and the puncturing on the thorax coarser.

The punctuation varies in strength, and in one example the antennæ are entirely black.

4. **Mimesa longiventris.** (Tab. VIII. fig. 18, ♀.)

Nigra, mesonoto et scutello striolatis; tarsis testaceis; abdomine quam thorax duplo longiore, dense piloso; alis hyalinis, brevibus. ♀.

Long. 12 millim.

Hab. Mexico, Atoyac in Vera Cruz (*H. H. Smith*).

Head shining, punctured on the front, the vertex almost impunctate; below the antennæ densely covered with silvery, above more sparsely with long erect fuscous, hair. Ocelli laterally and behind surrounded by a deep and wide furrow; a narrow keel runs down from the anterior ocellus. Clypeus moderately convex, the apex broadly rounded. Eyes a little diverging on the lower side; the ocelli almost forming a triangle. Antennæ not much thickened towards the apex, covered with a white microscopic pile; the third joint as long as the first, and about one quarter longer than the fourth. Mesonotum and scutellum coarsely and longitudinally striolate, the latter not so strongly as the former; median segment coarsely reticulated, and with a large fovea in the basal area, which is not clearly defined; mesopleuræ smooth and shining; the longitudinal furrow wide and deep. Petiole scarcely half the length of the rest of the abdomen; the abdominal segments broadly covered with a silvery pubescence at the apex; pygidial area obsolete. There is a fringe of greyish-silvery pubescence on the pronotum, and a denser and longer fringe on the sides of the scutellum and metanotum; the apex of the median segment bears long silvery hair. Wings short, only reaching to the middle of the abdomen; the second cubital cellule at the top about one-third of the length of the third cellule, and shorter than the space bounded by the recurrent nervures; the first and second transverse cubital nervures are straight; the first recurrent nervure is received somewhat beyond the basal third, the second at about half that distance from the apex.

5. **Mimesa monticola.** (Tab. VIII. fig. 19, ♀.)

Nigra, basi tibiarum posticarum late testacea; clypeo late inciso; mesonoto punctato, scutello striolato; petiolo quam abdomen fere longiore; alis longis. ♀.

Long. 11 millim.

Hab. Mexico, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Head shining, strongly punctured; a depression behind the ocelli; clypeus projecting,

narrowed rather sharply towards the apex, which is sub-bidentate; eyes slightly diverging beneath; ocelli in a curve, an indistinct shallow furrow behind them; the face, clypeus, and orbits behind densely covered with silvery pubescence. Antennæ subclavate, pilose; the third joint longer than the first, and about three-quarters longer than the fourth. Mesonotum coarsely, longitudinally, rugosely punctured; the pleuræ punctured, but not strongly; the furrow on the mesopleuræ distinct; scutellum sparsely punctured, the metanotum more closely and strongly so; median segment opaquely, closely rugose, densely covered with long silvery hair, the basal area shining, laterally at the base stoutly, longitudinally striolate, the centre at the base with two stout converging keels, the rest with stout transverse striolations. The pronotum at the base is edged with a close greyish pile; the pleuræ, and especially the sternum, with rather long grey hair; the mesonotum clothed with short pile. Petiole curved, pilose beneath, nearly as long as the following three abdominal segments united. Pygidial area acute at the apex, shining, keeled laterally. Legs with the tibiæ and tarsi densely pilose; the femora bearing rather long white hair. Second cubital cellule converging at the top, not triangular, at the top as wide as the space bounded by the recurrent nervures; the first two transverse cubital nervures straight, the third curved inwardly in the middle; the first recurrent nervure received a little before the middle, the second perceptibly before the transverse cubital nervure.

Not difficult to distinguish from the other species here described by the projecting clypeus, narrowed towards the apex.

6. **Mimesa montezuma.**

Nigra, basi antennarum rufa; petiolo quam abdomen breviore; mesonoto et scutello striolatis; segmento mediali argenteo-hirto; alis brevibus, hyalinis. ♀.

Long. $10\frac{1}{2}$ millim.

Hab. Mexico, Atoyac in Vera Cruz (*H. H. Smith*).

Allied to *M. monticola*; but with the clypeus less projecting (being merely convex, not gaping), and not narrowed towards the apex, this part being semicircular; the ocelli form more of a triangle, and are in pits, while a furrow runs down from the anterior one; the punctuation of the head not so strong; the scutellum longitudinally rugose; the metanotum closely rugose; the mesopleuræ almost impunctate; the median segment more coarsely rugose, and its base not so sharply curved; the abdomen longer, and the petiole not much longer than the following two segments united; the wings shorter, not reaching beyond the fourth abdominal segment (in *M. monticola* they reach to the apex of the abdomen); and the third cubital cellule shorter, not being twice the length of the second.

7. **Mimesa claviventris.** (Tab. VIII. fig. 20, ♀.)

Nigra, basi antennarum rufa; petiolo quam abdomen longiore; segmento mediali aureo-hirto; alis hyaliuis, longis, cellula radiali infuscata. ♀.
Long. 9 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Head coarsely punctured; below the antennæ densely covered with a silvery pubescence; the front and vertex with a sparser pubescence; the pubescence behind the eyes inclining to golden; the ocelli hardly forming a triangle, in pits, the posterior pair united by a curved furrow, a furrow running down from the anterior one. Clypeus convex, the apex broadly rounded. Thorax above coarsely, rugosely punctured; median segment coarsely punctured, irregularly reticulated, the basal area irregularly striolate, shining; mesopleuræ finely punctured, densely covered with a silvery pubescence. Petiole curved, as long as the rest of the abdomen; pygidial area shining, stoutly keeled down the centre, impunctate. Tibiæ and tarsi appearing white through the dense white pile which covers them; the femora sparsely pubescent on the lower side. Wings reaching to the apex of the abdomen, with a distinct smoky tint; the radial cellule dark fuscous; the second cubital cellule rather elongate, about twice the length of the third; the first recurrent nervure received in the basal third of the cellule, the second shortly before the transverse nervure, the space between the two being somewhat less than the top of the cellule.

PSEN.

Psen, Latreille, Précis des caract. gén. des Ins. p. 122 (1796).

In the only species from our region the two hinder tibial spurs are of about equal thickness, the second recurrent nervure is received in the third cubital cellule, and the transverse median nervure is interstitial. In the generic definitions the stigma in *Psen* is said to be "broad," and that of *Mimesa* "slender;" but in *P. annulipes* it is not broader than in the species I have placed under *Mimesa*.

1. **Psen annulipes.** (Tab. VIII. fig. 21, ♀.)

Niger, nitidus, facie et clypeo aureo-hirtis; basi tarsorum albida; alis violaceo-fumatis, stigmate fulvo. ♀.
Long. 11–12 millim.

Hab. Mexico, Amula 6000 feet, Rincon 2800 feet, Chilpancingo 4600 feet, all in Guerrero, Teapa in Tabasco (*H. H. Smith*).

Eyes slightly converging beneath. Ocelli almost forming a triangle. Head shining, sharply retreating behind the eyes; the occiput margined; the vertex and front sparsely haired; the face covered with long golden hair; clypeus convex, the apex transverse; ocellar region raised. Antennæ short, stout; the third joint fully one

quarter longer than the fourth. Thorax shining, minutely and sparsely punctured; the median segment largely reticulated, the keels stout; there is a belt of depressed silvery pubescence on the pronotum; the median segment is covered with rather long silvery hair, the rest of thorax being sparsely haired. Basal half of the petiole narrow, cylindrical, slightly curved, not sulcated above or laterally. Abdominal segments impunctate, the apex of the abdomen densely covered with golden-fulvous hair. Pygidial area broad, curving to a sharp point at the apex; the top densely covered with dark brown stiff, depressed, pubescence; the sides punctured. Legs pilose; the base of the tibiæ and of the tarsi broadly, and the spurs, white; tarsi thickly spinose, the spines long. Second cubital cellule narrow, the top more than half the length of the bottom, and twice the length of the third; the first recurrent nervure about three-fourths of the length of the top of the second cellule from the first transverse cubital nervure; the second recurrent nervure immediately beyond the second transverse cubital nervure, in the third cubital cellule, the latter not much narrowed at the top; the third transverse cubital nervure curved at the bottom, the top almost straight.

Fam. PEMPHREDONIDÆ.

A family of small extent, and with the species comparatively minute and inconspicuous.

STIGMUS.

Stigmus, Jurine, Nouv. Méth. de Class. les Hymén. p. 139 (1807).

Only two species of *Stigmus* have been recorded from the Nearctic region and one from South America.

1. **Stigmus parallelus.**

Stigmus parallelus, Say, Bost. Journ. Nat. Hist. i. p. 378[1]; Complete Writings, ii. p. 760.

Hab. Mexico[1].

I cannot identify this insect amongst our Mexican specimens of *Stigmus*.

2. **Stigmus podagricus.** (Tab. VIII. fig. 22, ♀.)

Stigmus podagricus, Kohl, Ann. k. k. naturh. Hofmus. v. p. 65[1].

Hab. Mexico, Orizaba (*Bilimek*[1]) (*F. D. Godman & H. H. Smith*), Tepetlapa in Guerrero, Teapa in Tabasco (*H. H. Smith*).

This species differs from the following by the pronotum above being sharply raised, completely transverse (not narrowed at the base), and with the sides sharply edged.

3. **Stigmus montivagus.** (Tab. VIII. fig. 23, ♀.)

Niger, coxis, trochanteribus, tarsis, tibiis, femoribus anticis tegulisque rufo-testaceis; alis hyalinis. ♀.
Long. 4–4½ millim.

Hab. Mexico, Chilpancingo 4600 feet, Omilteme 8000 feet (*H. H. Smith*).

Head aciculate, almost opaque, the lower part more shining; the front depressed in the middle; the clypeus projecting, finely punctured, transverse at the apex. Mandibles clear yellow. Scape yellowish, the flagellum dull black beneath. Head rather sharply narrowed behind the eyes. Thorax above alutaceous, opaque, the pleuræ shining, aciculate; median segment shining, closely and finely striated, with a central and two lateral (stout) keels, the rest with irregular reticulations. Pronotum not keeled above, short, narrowed in front, at the apex crenulated, the edges rounded; the mesopleuræ with two furrows, the lower one very deep and wide, forming a triangle; the metapleuræ longitudinally striolated and aciculate; there is a stout rounded keel at the base of the median segment, and in the centre of the mesonotum are three polished lines. Petiole curved, finely longitudinally striated, keeled laterally, nearly as long as the hind femora. Basal joint of the middle tarsi shorter than the other joints united.

The coloration of the legs varies somewhat; the hinder tibiæ are, for the greater part, black. The tegulæ are testaceous, the palpi and tubercles clear yellow.

Fam. CRABRONIDÆ.

Very few species of this interesting family have been recorded from the Neotropical zone, the Crabronidæ being apparently more characteristic of temperate than of tropical climates. Over one hundred species have been described from the Nearctic region; while the species known from the Palæarctic are very numerous.

I have included *Oxybelus* as a subfamily. I am not sure, however, but that it might be advantageously removed from the Crabronidæ.

Subfam. *CRABRONINÆ.*

CRABRO.

Crabro, Fabricius, Ent. Syst. ii. p. 293 (1793).

I am unable to accept the numerous genera (*Solenius*, *Ceratocolus*, *Crossocerus*, &c.) formed by Saint-Fargeau and Dahlbom out of the Fabrician genus *Crabro*, chiefly because the characters on which they were founded merge too much into each other.

The Central-American species may be tabulated thus:—

Abdomen not petiolate.
  Apical abdominal segment acutely pointed, narrowly compressed, grooved; ♂ fore tibiæ normal.
    Abdomen at base and the thorax rugosely punctured.
      Pronotum transverse, the edges acute . . . . . *saxatilis.*
      Pronotum subtransverse, the edges rounded . . . . . *championi, atitlanæ.*

Abdomen at base not rugosely punctured.
Abdomen banded with yellow. [*centralis, ariel.*
The base punctured . . . . . *sonorensis, montivagus,*
The base impunctate . . . . . *hector, costaricensis.*
Abdomen black.
Thorax rugose . . . . . *constanceæ.*
Thorax impunctate . . . . . *guerrerensis, yucatanensis, montezuma.*
Apical abdominal segment not acutely pointed or grooved, not curved; ♂ fore tibiæ expanded (= *Thyreopus*, St.-Farg.) . . *alpestris, alticola, peltista.*
Abdomen petiolate, the petiole nodate at the apex . . . . . *fulvo-hirtus, maculitarsis, jason.*

1. **Crabro saxatilis.** (Tab. IX. fig. 1, ♀.)

Niger, crebre punctatus; abdominis segmentis 2°–6ᵐ, femoribus, tibiis tarsisque anticis flavis; petiolo crebre punctato; alis fere hyalinis. ♀.
Long. 7 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*), Temax in North Yucatan (*Gaumer*).

Front shallowly excavated, shining, impunctate, the sides and apex aciculated, the central furrow fine. Head closely and rather strongly rugosely punctured. Ocelli forming a curve, separated from each other by the same distance they are from the eyes—by the length of the second and third antennal joints united. Clypeus rather sharply keeled in the middle. Third antennal joint twice the length of the second, and longer than the fourth. Pronotum short, almost transverse, the edges ending in a sharp tooth-like point; propleuræ deeply excavated, shining, irregularly striolate. Mesothorax and scutellum coarsely and strongly rugosely punctured; base of the median segment rugosely punctured, the apex coarsely transversely striolated; metapleuræ not deeply excavated, aciculated, and obliquely striated. Basal segment of the abdomen coarsely rugosely punctured, with a belt of much finer and closer punctuation at the apex; the second segment in the middle and at the base punctured, but not strongly; the third segment still less strongly punctured; the other segments aciculated, with some fine punctures at the base and middle. Pygidial area punctured, the apex bluntly rounded. Legs covered with a pale silvery pubescence; the hind tibiæ with short stout bristles. The long spur of the hind tibiæ is about one-third of the length of the metatarsus and a little longer than the second and third joints united. The wings vary in tint—from almost hyaline to fulvous-smoky; the stigma is dark testaceous.

2. **Crabro championi.** (Tab. IX. fig. 2, ♀.)

Niger, hirsutus, abdomine punctato; metanoto abdominisque maculis 8 flavis; alis fere hyalinis, stigmate nigro. ♀.
Long. 9 millim.

Hab. GUATEMALA, Las Mercedes 3000 feet (*Champion*).

Front excavated; its furrow hardly differentiated from the depression; smooth and shining. Cheeks regular. Vertex not depressed; the ocelli in a curve, separated by a somewhat less distance from each other than they are from the eyes—by a little more than the length of the third antennal joint. Clypeus projecting at the apex, not keeled down the centre. The punctuation of the head is close, uniform, and rather coarse; the vertex bears long blackish hair; the cheeks and the outer orbits of the eyes have a dense silvery-golden pubescence; the clypeus is covered with long silvery hair. The scape of the antennæ is yellow beneath; the flagellum has a pale microscopic pile; the third joint is more than one-third longer than the fourth. Pronotum hardly transverse, forming a slight curve, the edges rounded. Mesonotum coarsely rugose, the furrows narrow, nearly hidden by the coarse sculpture; the scutellum convex, more shining than the mesonotum, and with large clearly separated punctures; upper half of the mesopleuræ strongly longitudinally striolated, the lower half and the sternum coarsely punctured. Metanotum with an indistinct punctuation. Median segment at the base rugosely punctured; the median area narrow, **V**-shaped; the apex oblique, transversely striolated; the furrow wide and deep. Metapleuræ finely and closely longitudinally striated. The pubescence is sparse and blackish; on the median segment long and pale. Abdomen shining; the basal segment bearing large, distinctly separated, rugose punctures; the second segment is less strongly punctured, the others much more finely; the base and apex of the segments smooth and impunctate. The pubescence on the sides, base, and apex of the abdomen is silvery-white. Legs covered with silvery hair; the tarsi with a fulvous pile; tibiæ but moderately spinose; the long spur of the hind tibiæ reaches almost to the middle of the metatarsus, and is twice the length of the second tarsal joint; the third and fourth hind tarsal joints are subequal. The transverse cubital nervure is received a little before the middle of the radial cellule. An interrupted line on the pronotum, the tubercles, a spot on either side of the base of the scutellum, the metanotum, the middle femora beneath, two lines on the hind tibiæ behind, and the calcaria, clear yellow. The basal four segments of the abdomen with a reddish-yellow line on each side, becoming wider to the fourth; the other segments with a complete belt of obscure reddish-yellow.

3. **Crabro atitlanæ.** (Tab. IX. fig. 3, ♀.)

Niger, crebre punctatus; linea pronoti, maculis 2 scutelli, metanoto, linea tibiarum maculisque 10 abdominis flavis; abdomine punctato; alis hyalinis, nervis nigris. ♀.
Long. 6 millim.

Hab. GUATEMALA, Volcan de Atitlan 2500 to 3500 feet (*Champion*).

Head densely covered with a silvery-white pile; the clypeus with a silvery depressed pile. Front and vertex rugosely punctured. Clypeus convex, stoutly carinate down the centre. Ocelli in a curve, separated by a less distance from each other than they

are from the eyes. Antennæ stout, covered with a white pile; the third joint distinctly longer than the fourth. Thorax bearing a pale pubescence; rugosely punctured; the pleuræ shining, nearly hidden by a white longish pubescence. Pronotum almost transverse, the lateral angles acute, oblique, and closely pressed to the head; the pleuræ oblique, sharply separated, and narrowed to the prosternum. The mesonotum is coarsely rugosely striolated; in the middle is a large wide depression, the surface at the sides of this being raised and keeled. Scutellum convex, the base before the fovea oblique. Metanotum shining, impunctate. Median segment finely rugose, short, semiperpendicular at the apex; the sides and metapleuræ densely covered with longish white hair. Abdomen shining, the segments depressed at the apex; the apical half of the petiole and the second and third segments bearing large, distinctly separated punctures; the other segments with the punctuation much finer and indistinct. Legs bearing a white pubescence; the long spur of the hind tibiæ reaching to the middle of the metatarsus, which is longer than all the other joints united. The scape of the antennæ beneath, an interrupted line on the pronotum, the tubercles, two closely united marks on the sides of the scutellum at the base, the metanotum, a line on either side of the abdominal segments 1–5 (that on the first and second much shorter and wider than the others), two small marks on the hypopygium, a line on the four front femora and one on the hind tibiæ, and the spurs, clear yellow; the tibiæ fusco-testaceous. Wings hyaline, the stigma and nervures fuscous; the transverse cubital nervure received before the middle of the radial cellule—more than twice the length of the turned-up branch of the radial nervure from the stigma.

4. **Crabro sonorensis.** (Tab. IX. fig. 4, ♀.)

Niger, dense punctatus et albo pilosus; pedibus fulvis; abdominis segmentis 3°–6^{m} late flavis; alis fulvo-fumatis, stigmate ochraceo. ♀.

Long. 13 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

Vertex not depressed, bearing a uniform and moderately strong punctuation. Ocelli in a curve, the hinder ones separated by a greater distance from the eyes than they are from each other, and separated from each other by one and a half times the length of the fourth antennal joint. Frontal depression shining, impunctate; the basal part much narrowed, hardly half the width of the rest; the apex rounded. Cheeks regular, hardly depressed. Clypeus carinated in the centre. Third antennal joint nearly one fourth longer than the succeeding joint. Collar with a moderately wide furrow in the centre; the furrow behind it wide and deep; the edges oblique, slightly incised. Mesonotum with a wide, but not very deep, depression in the centre, reaching to the collar but not to the scutellum. There is no furrow between the epimera and the sternum of the mesothorax; the furrow behind the tubercles is wide and shallow, and there is a narrower furrow with a stout keel in front of them. Scutellum moderately convex; furrowed at the base and apex; not twice the length of the second tarsal

joint. Median segment at the base with a gradual slope, and with a rather deep furrow in the centre; the apex oblique. The mesonotum bears a strong, close, and regular punctuation; the scutellum has the punctures, if anything, larger, but more widely apart; at the base in the centre the median segment is punctured like the mesonotum, the sides being irregularly striolated; the oblique apical part is transversely striolated and punctured; mesopleuræ coarsely striolated and punctured; metapleuræ not so coarsely obliquely striolated; meso-metapleural division irregularly striolate. Basal abdominal segment not so strongly punctured as the mesonotum; the following segments more strongly and closely punctured. Pygidial area shining; the apex and sides bearing some large punctures. Tibiæ sparsely spinulose; the long spur of the hind pair about one third of the length of the metatarsus, and not much longer than the second tarsal joint. Legs regular. Transverse cubital nervure received slightly beyond the middle of the radial cellule. The scape of the antennæ and the mandibles (except at the base and apex) clear citron-yellow; the collar, a line at the base and apex of the scutellum, the tegulæ, tubercles, a spot behind them, a line on the base of the second abdominal segment (not reaching to the middle), and the other segments entirely (except the apex of the third), yellow; legs clear ferruginous, the tibiæ and tarsi tinged with yellow. Clypeus covered with a long shining-golden pubescence; the cheeks densely clothed with a fulvous-golden, the vertex sparsely with fuscous, pubescence. Thorax covered with a fusco-fulvous pile, longer on the metapleuræ and of a paler tint. Abdomen at the base with a fuscous pubescence; the apical segments (especially at the apices) densely covered with a stiff golden pubescence. Femora and coxæ with a sparse longish white pubescence; the tibiæ and tarsi with a short pile.

5. **Crabro montivagus.** (Tab. IX. figg. 5, ♀; 5 *a*, ♂ organ; 5 *b*, ♂ antenna.)

Niger, punctatus, tibiis anticis abdominisque segmentis 3°–6^{m} flavis; alis fulvo-fumatis, stigmate ochraceo.

♀ et ♂.

Long. 13–14 millim.

Hab. Mexico, Omilteme 8000 feet, Xucumanatlan 7000 feet, Amula 6000 feet, all in Guerrero (*H. H. Smith*).

Head densely covered with fulvous, along the inner orbits and clypeus with golden, pubescence, closely punctured; the eyes at the apex separated by fully the length of the second and third antennal joints united. Clypeus sharply convex in the middle. Ocelli in a curve, separated from each other by a much less distance than they are from the eyes; hinder ocelli situated almost beyond the eyes. The hinder edge of the eyes situated before the middle of the head, the head itself thus being well developed behind them, becoming gradually (but not much) narrowed posteriorly. Antennæ stout, covered with a pale down. Thorax rather densely covered with a whitish pubescence; closely and somewhat coarsely punctured; the scutellum more shining and with the punctures more widely separated. Pronotum almost transverse above, the

edges obliquely truncated, not acute. There is a wide, rather deep, depression in the anterior half of the mesonotum. Median segment furrowed in the centre at the base, the apex transversely striolated. Mesopleuræ coarsely longitudinally punctured, striolate posteriorly; metapleuræ excavated, finely striolated. Abdomen finely punctured, shining; the segments at the apex fringed with golden-fulvous pubescence, which is especially long and thick on the penultimate. Pygidial area shining, black, marked with large, clearly separated punctures; the sides furrowed. Legs densely pilose; tibiæ spinose, the long spine reaching to the middle of the metatarsus. Transverse cubital nervure received beyond the middle of the radial cellule. The scape of the antennæ, an interrupted line on the pronotum, the tubercles, a mark on either side of the scutellum, the metanotum, the base of the mandibles, and the knees and tibiæ in front, clear yellow; the abdominal segments 3–5 almost entirely yellow; the tarsi and tegulæ rufo-testaceous.

The male similar to the female, but with the sixth joint of the antennæ deeply curved.

6. **Crabro centralis.** (Tab. IX. figg. 6, ♀; 6 *a*, ♂ organ; 6 *b*, ♂ antenna.)

Niger, punctatus, capite dense fulvo-piloso; tibiis anticis, abdominis segmentis 2°–6ᵐ flavis; alis leviter fumatis, nervis flavis. ♀.

Long. 10 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*); GUATEMALA, San Gerónimo (*Champion*); PANAMA, Bugaba (*Champion*).

Head densely covered with a fulvous, the lower orbits and clypeus with golden, pubescence, closely punctured; the hinder (and upper) edge of the eyes situated slightly in front of a line drawn across the middle of the head. Ocelli in a curve, the hinder ones opposite the end of the eyes, separated from each other by a somewhat less distance than they are from the eyes. Clypeus convex in the middle. Eyes beneath separated by about the length of the second and third antennal joints united. Thorax densely pubescent, closely punctured. Edge of the pronotum hardly transverse, curving backwards laterally. Median segment at the top transversely rugosely punctured; the apex transversely striolate; at the base furrowed in the centre; the basal area defined by curved furrows. Pleuræ rugosely punctured. Abdomen shining, finely punctured; pygidial area hollowed and turned up at the apex, punctured. Transverse cubital nervure received beyond the middle of the cellule. The long spur on the hind tibiæ does not reach the middle of the metatarsus.

A smaller species than *C. guerrerensis*; otherwise differing in having the second and apical segments yellow; the metanotum without yellow; the basal area of the median segment defined laterally by furrows; the hinder ocelli separated from each other by a rather less distance than they are from the eyes.

7. **Crabro ariel.** (Tab. IX. figg. 7, ♀; 7 *a*, ♂ organ; 7 *b*, ♂ antenna.)

Niger, nitidus, linea pronoti, metanoto, abdominis lineis 3 tibiisque ex parte flavis; alis fuscis. ♀ et ♂.
Long. fere 10 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*), Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Head above densely covered with long fuscous hair, the orbits and clypeus with silvery pubescence, closely and somewhat strongly punctured. Eyes behind not reaching to the middle of the head. Ocelli in a curve, separated from each other by a much less distance than they are from the eyes. Antennal groove shining, aciculate. Thorax closely rugosely punctured; scutellum longitudinally rugose. Median segment rugose, furrowed down the centre, the basal area hardly defined. Pronotum almost transverse above; the edges obliquely truncate. Pleuræ and median segment bearing longish white, the mesonotum fuscous, hair. Abdomen shining, aciculate. Pygidial area strongly and closely punctured at the base; the narrowed apex with the punctures large and widely separated. The transverse cubital nervure received almost in the middle of the radial cellule. The scape of the antennæ, an interrupted line on the pronotum, the tubercles, metanotum, a mark on either side of the basal segment, a complete line on the second segment, the fourth and fifth segments, the four anterior tibiæ in front, the greater part of the hinder tibiæ, the spurs, and the metatarsus (except at the apex), clear citron-yellow; tegulæ piceous. The long spur on the hind tibiæ reaching beyond the middle of the metatarsus.

This species is much more shining than any of its allies.

8. **Crabro hector.** (Tab. IX. fig. 8, ♀.)

Niger, crebre punctatus, clypeo aureo-piloso; metanoto abdominisque maculis 6 flavis; alis fumato-hyalinis. ♀.
Long. 11–12 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

Front and vertex with a close finely rugose punctuation; the front broadly depressed; frontal furrow shining, of nearly equal width throughout, a furrow running to it from the ocelli. The ocelli almost in a triangle; the hinder ones separated from each other by about the length of the fourth antennal joint, and from the eyes by a somewhat less distance than the length of the third—by a greater distance than they are from each other. Cheeks normal. Clypeus sharply keeled in the centre. The third antennal joint is nearly as long as the fourth and fifth joints united, but distinctly thinner than they are, and dilated at the apex. Collar transverse, the edges obliquely rounded, furrowed in the centre. Mesonotum finely rugosely punctured, and bearing three longitudinal keels in the centre at the base. Scutellum longitudinally rugose, as long as the second tarsal joint. Median segment at the base with large irregular punctures; with some stout striations in the centre on either side of the narrow, not very distinctly

defined, furrow; the apex strongly transversely striolated. Mesopleuræ coarsely longitudinally punctured; metapleuræ finely longitudinally rugose. There is no furrow between the epimera and sternum of the mesothorax. Meso-metapleural furrow crenulate, wide. Abdomen shining, very finely and minutely punctured, almost aciculate. Pygidial area hollowed, aciculated and opaque at the apex. Legs normal, covered sparsely with soft white hair; the tibial spines short, blunt, stout; calcaria white; the long spur of the hind tibiæ reaching nearly to the middle of the metatarsus; the tarsal joints whitish at the apex beneath. Transverse cubital nervure received distinctly before the middle of the radial cellule. The scape of the antennæ and the mandibles (except at the base and apex) citron-yellow; the collar, tubercles, metanotum, and a line on the sides of the abdominal segments 1–5 reddish-yellow. Clypeus covered with a dense golden pile; the cheeks and vertex with a long fuscous pubescence; thoracic pubescence longish and pale; penultimate and last abdominal segments fringed with long stiff golden hair.

9. **Crabro costaricensis.** (Tab. IX. fig. 9, ♀.)
Niger, scutello, metanoto, abdominis 6 maculatis apiceque petioli flavis; alis fere hyalinis, nervis nigris. ♀. Long. 8 millim.

Hab. Costa Rica, Rio Sucio (*Rogers*).

Head opaque, finely and closely punctured, clothed with short pile. Ocelli in pits, almost in a triangle; the hinder ocelli, if anything, separated by a greater distance from each other than they are from the eyes. An oblique furrow runs from the eyes to the hinder ocelli; and a broader one runs from the front ocellus to the frontal depression. Clypeus moderately convex, bluntly keeled down the centre; the apex depressed, margined, slightly incised in the middle. Thorax opaque, like the head; the pronotum wide, rounded, the sides obliquely truncated; the top not much elevated above the prosternum; mesonotum furrowed down the centre; the pleuræ opaque, minutely and closely punctured; an oblique furrow running from the point of insertion of the fore wings to the propleuræ. Scutellum shining, punctured. Central area of the median segment distinctly separated, shining, a wide margined aciculate hollow in its centre, the sides strongly striolated; the rest of the segment opaque, finely and closely punctured, densely covered with longish silvery hair; the apex of the segment furrowed in the middle, obliquely sloped. Abdomen shining, aciculate. Legs stout, covered with pile; the tibiæ stoutly spinose; the long spur of the hind tibiæ reaching to the middle of the metatarsus, which is grooved and somewhat longer than the following three tarsal joints united. The transverse cubital nervure is received almost in the middle of the radial cellule. The scape of the antennæ, an interrupted line on the pronotum, the tubercles, scutellum, post-scutellum, a complete band on the first abdominal segment and a widely interrupted one on the second and third segments,

and the spurs, yellow. The tibial spines are fulvous; the apices of the tarsal joints testaceous.

10. **Crabro constanceæ.** (Tab. IX. figg. 10, ♀; 10 *a*, ♂ organ; 10 *b*, ♂ antenna.)

Niger, punctatus, tibiis, femoribus posterioribus subtus basique tarsorum flavis; alis fumatis, nervis nigris. ♀ et ♂.

Long. 10–13 millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*); Panama, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Front excavated, shining, impunctate, without a central furrow. Ocelli hardly forming a triangle; the posterior ocelli separated from each other by nearly the same distance that they are from the eyes,—by nearly the length of the third antennal joint. Vertex strongly punctured; the orbits behind pitted with large round punctures; beyond this punctured space the head is impunctate; a lance-shaped aciculate fovea runs from near the hinder ocelli almost to the eyes; clypeus broadly carinate in the middle, the apex projecting. Head above sparsely pilose; the clypeus densely covered with a golden pile. Scape of the antennæ yellow; the flagellum from its second joint opaque, owing to a dense pile; the third joint about one quarter longer than the fourth. Pronotum margined in front; concave, the edges projecting, sharply triangular. Pronotum coarsely rugosely punctured; the base of the mesonotum less coarsely and closely rugose, its apex with large, separated punctures; mesopleuræ shining, pitted with large scattered punctures, except below the point of insertion of the wings, this being also the case with the scutellum, the base of which is impunctate; metanotum more closely punctured; median segment coarsely reticulated, the apex with an oblique slope; metapleuræ excavated, and marked with oblique widely separated striæ. Basal segment of the abdomen with a few scattered punctures; the second and third segments depressed at the base, finely transversely striated, the middle punctured, the apex finely transversely rugosely punctured; the other segments bear scattered punctures, and, at the apex, are finely transversely rugosely punctured. Pygidial area shining, punctured; the lateral tuft of hair thick, long, fulvous. Legs sparsely haired; the long spur of the hind tibiæ not reaching to the middle of the metatarsus, curved, and not twice the length of the second joint, which is hardly the length of the third and fourth joints united, the latter subequal. The anterior femora on the outer side are shining, impunctate, flat, the sides distinctly margined and furrowed, the furrows uniting at the base in a rounded angle; the anterior tibiæ are also margined down the sides; the hind femora are punctured in front. The transverse cubital nervure is received slightly before the middle of the radial cellule.

The male has the edges of the collar marked with yellow; the outer orbits of the eyes bearing a golden pubescence; and the antennæ thicker, simple, with the third and fourth joints subequal.

11. **Crabro guerrerensis.** (Tab. IX. fig. 11, ♀.)—
Niger, aciculatus; capite thoraceque opacis, abdomine nitido; alis fumatis.
Long. 7–8 millim.

Crossocerus (Epicrossocerus?) testaceus ♀. Leclercq (Bull. Roy. Inst. Sci. Nat. Belg. Nat. 26, No. 35, p. 5, 1950)

Hab. Mexico, Amula 6000 feet, Chilpancingo 4600 feet, both in Guerrero (*H. H. Smith*).

Head shining, finely punctured, alutaceous, sparsely haired, the cheeks and clypeus densely covered with silvery pubescence. Vertex depressed, and with a shallow furrow running down from the ocelli; front rather widely excavated, shining, impunctate. Clypeus broadly keeled in the centre. Ocelli in a triangle; the posterior ocelli separated by a little more than the length of the second antennal joint, and by one half more from the eyes,—by a much greater distance from the eyes than from each other. There is a narrow keel behind the ocelli, and an indistinct shallow furrow runs obliquely from them to the eyes. Pronotum transverse in front, the lateral angles somewhat obliquely rounded, the middle indented; propleuræ deeply and widely excavated, finely and closely punctured; mesopleuræ coarsely aciculated, semiopaque; scutellum shining, finely punctured; the propleuræ shining, almost impunctate. Basal area of the median segment large, wider than long, shining, impunctate; the centre furrowed; the rest of the segment shining, finely punctured; the metapleuræ finely and closely longitudinally striated; apex of the median segment with a gradual rounded oblique slope. Petiole shining, impunctate, gradually, but slightly, enlarged towards the apex, a little longer than the second segment. The second and third segments obscurely and finely aciculate; the penultimate segment densely pilose; the hypopygium wide, sharply narrowed towards the apex, shining, the base punctured. Legs covered with a white pubescence; the long spur of the hind tibiæ rather more than three-quarters of the length of the metatarsus. The transverse cubital nervure received about one fourth before the middle of the radial cellule. The third joint of the antennæ is longer than the fourth, which, again, is longer than the second.

12. **Crabro yucatanensis.** (Tab. IX. fig. 12, ♀.)
Niger, antennis rufo-testaceis; scapo antennarum, geniculis tarsisque flavis; nitidus, segmento mediali opaco, rugoso; clypeo 4-dentato; alis hyalinis, nervis nigris. ♀.
Long. 4·5 millim.

Hab. Mexico, Temax in N. Yucatan (*Gaumer*).

Vertex impunctate; the front roughened; sparsely haired. Clypeus with a distinct narrow keel down the centre; the apex almost transverse, and with four stout teeth—the two inner obtuse at the apex, the outer triangular. Frontal groove wide, rounded at the top. Ocelli in a subtriangular curve; the hinder ocelli separated from the eyes by a somewhat greater distance than they are from each other. Eyes coarsely faceted. Antennæ stout, the scape yellow; the flagellum rufous, covered with a pale microscopic

pile; the third and fourth joints subequal and a little longer than the second, which is globular. Mandibles yellowish, black at the base and apex. Pronotum above transverse, the lateral angles bluntly acute; the slope almost perpendicular; the prosternum separated distinctly from it. Mesonotum aciculate or finely punctured in front, a broad depression at the base; the mesopleuræ without punctures, shining; the furrow below the tegulæ wide, crenulated; in the centre is, below the point of insertion of the wings, a large, oblique, somewhat pear-shaped depression or large fovea. Scutellum finely punctured, shining. Metanotum finely rugose. Median segment finely rugose; the base rounded, the apex oblique, with a large oblong fovea in the middle. Metapleuræ excavated, shining, almost impunctate. The pronotum (except in the centre), the tubercles, a spot on either side of the scutellum at the base, and a narrow lateral line beyond them, clear yellow. Abdomen shining, impunctate; the apical segments sparsely covered with whitish hair. The hypopygium almost twice longer than broad; densely covered with stiff depressed bristle-like silvery-white hair; the apex rounded, not half the width of the base. Legs covered with a silvery pubescence; the knees, spurs, tarsi, and anterior tibiæ yellow; the middle tibiæ at the apex, the hinder tibiæ for the greater part, brownish; the long spur of the hind tibiæ reaches nearly to the apex of the metatarsus. The transverse cubital nervure is received almost twice the length of the curved-up part of the radial nervure from the stigma, *i. e.* considerably before the middle of the cellule. The wings have a fuscous or smoky tinge; the stigma is fuscous.

13. **Crabro montezuma.** (Tab. IX. figg. 13, ♀; 13 *a*, ♂ antenna.)

Niger, nitidus, tarsis, tibiis anterioribus basique tibiarum posticarum flavis; alis hyalinis. ♀ et ♂. Long. fere 5 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Antennæ stout, thickened gradually towards the apex, beneath brownish; joints 2–4 subequal. Head large, cubital. The ocelli in a curve; the posterior ocelli in pits, separated from each other by nearly double the distance they are from the eyes, which do not reach to them. Clypeus and cheeks covered closely with a silvery pubescence. Thorax shining, impunctate; the pronotum at the edges slightly curving towards the head, this part being yellow and separated from the posterior and larger portion, which is rounded laterally. Basal area of the median segment defined, longitudinally striolated; the apical region deeply excavated, finely transversely striated. Pleuræ shining, impunctate, the divisions crenulate; a large fovea in the centre of the mesopleuræ. Abdomen shining, as long as the thorax; the apical segment rufous. Wings hyaline, the nervures black; the transverse cubital nervure received considerably before the middle of the cellule.

The male has the antennæ thicker; the second joint projects obliquely, and becomes larger towards the apex; the third joint is shorter, and with the fourth forms an incision.

The yellow line on the pronotum is largely separated in the middle; there is a yellow mark on either side of the scutellum; and there is more yellow on the tibiæ.

14. **Crabro alpestris.** (Tab. IX. fig. 14, fore leg, ♂.)

Niger, thorace immaculato (metanoto excepto); scapo subtus tibiisque flavo-lineatis; alis fuscis. ♂. Long. 8 millim.

Hab. Mexico, Tepetlapa in Guerrero 3000 feet (*H. H. Smith*).

Head closely punctured, sparsely pilose; the clypeus and cheeks covered with silvery pubescence. Ocelli in a triangle; the posterior ocelli separated from each other by a little more than the length of the third antennal joint, and by a somewhat greater distance from each other. Clypeus keeled in the centre, the apex incised. Pronotum brown, transverse, the edges oblique, projecting in front into a triangular tooth; the pleuræ excavated, finely punctured, behind shining. Mesonotum finely rugosely punctured; the scutellum with the punctures slightly more widely separated; mesopleuræ shining, bearing fine, distinctly separated punctures, the oblique furrow distinct. Basal area of the median segment depressed in the centre, and with an oval depression on either side of the base, the keels separating them being raised; the rest of the median segment densely covered with white hair and rugose, the apex with an almost oblique slope; the metapleuræ not excavated, finely longitudinally punctured. Petiole almost twice longer than wide, shining, with two small yellow marks at the apex. The other segments are aciculate; segments 2–4 have an elongated yellow mark on either side; the fifth segment is yellow, black at the base and apex, and with two small round black marks in the yellow; the sixth segment is yellow, except for two small black marks in the centre; the apical segment is densely covered with silvery hair; the hypopygium is convex, rounded at the apex. Legs sparsely haired; the knees, the anterior femora beneath, the anterior tibiæ and tarsi, the middle tibiæ and tarsi beneath, and the posterior tibiæ entirely behind and laterally at the apex, yellow. The long spur of the hind tibiæ reaches slightly beyond the middle of the metatarsus. For front tarsus see figure (fig. 14). The transverse cubital nervure is received a little before middle of the radial cellule.

15. **Crabro alticola.** (Tab. IX. figg. 15, ♂ organ; 15 *a*, fore leg, ♂.)

Niger, pronoto bilineato, scutello metanotoque flavis; alis fusco-hyalinis. ♀ et ♂. Long. 11–12 millim.

Hab. Mexico, Ciudad in Durango 8100 feet (*Forrer*).

Head closely and finely punctured; covered with a longish fuscous, the clypeus and cheeks with silvery, pubescence; frontal furrow wide and deep. Clypeus somewhat convex in the centre, the apex projecting outwardly, and with a wide and shallow incision in its middle. Ocelli in a curve, separated from each other by about the

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length of the third antennal joint, and by a somewhat greater distance from the eyes. Antennæ stout, densely covered with a pale pile, the third joint more than double the length of the second, and one-third longer than the fourth. Pronotum with a gradual slope to the head; the top transverse, with the angles oblique; the pleuræ behind deeply excavated. Mesonotum closely and somewhat strongly punctured, the central furrow wide; mesopleuræ more closely punctured than the head, the furrow crenulated. Scutellum shining, very slightly punctured, and with an olivaceous tinge. Central area of the median segment with the central furrow wide, and bearing some stout, irregular, almost oblique, keels; the rest of the median segment coarsely and closely transversely rugose, and covered densely with longish white hair. Metapleuræ finely, closely punctured, much more closely and strongly than the mesopleuræ. Petiole wide, gradually dilated to the apex, a little shorter than the second segment, shining, impunctate. The penultimate segment closely punctured, densely covered with a silvery pubescence. Pygidial area longish, gradually narrowed to the apex, which is rounded and half the width of the base; densely covered with stiff, depressed, fulvous-golden hair, and with scattered punctures. On the petiole, near the apex, there is a broad yellow stripe with a square indentation in the middle behind; the second, third, and fourth segments bear an elongated oval mark on each side. Legs covered with a pale silvery pubescence, which is rather long on the coxæ, trochanters, and femora; the tibial spines glistening white—the inner spur blackish, the outer one partly testaceous, the longer spur fully two-thirds the length of the metatarsus; there is a yellow streak on the tibiæ behind. Cubital nervure received slightly beyond the middle of the wing.

The male wants the yellow on the thorax (except a small irregular mark on the metanotum), and has the mark on the petiole interrupted. For anterior tibiæ and tarsi, see fig. 15 *a*.

16. **Crabro peltista.** (Tab. IX. figg. 16, ♀; 16 *a*, ♂ organ; 16 *b*, ♂ antenna; 16 *c*, *d*, fore leg, ♂.)

Crabro (*Thyreopus*) *peltista*, Kohl, Zool. Jahrb. iii. p. 586[1].

Hab. MEXICO, Chilpancingo 4600 feet, Omilteme 8000 feet, Amula 6000 feet, Xucumanatlan 7000 feet, all in Guerrero (*H. H. Smith*), Orizaba[1]; GUATEMALA, San Gerónimo, Dueñas (*Champion*).

Apparently a common species. The markings on the fore tarsi vary somewhat.

17. **Crabro fulvo-hirtus.** (Tab. IX. fig. 17.)

Niger, petiolo pedibusque brunneis; alis fumato-hyalinis, stigmate testaceo. Long. 9 millim.

Hab. MEXICO, Xautipa in Guerrero (*H. H. Smith*).

Head shining, aciculate, covered with a pale pubescence; the clypeus with silvery

pubescence. Front not much depressed beyond the central furrow, which becomes wider and deeper beyond the middle. Ocelli in shallow pits, separated from each other by about the length of the third, and from the eyes by the length of the second and third antennal joints united, and forming a triangle. The fovea at the eyes opposite the ocelli straight, narrow. Clypeus projecting in the middle, not sharply carinate; the apex of the projecting part protruding beyond the rest, and ending in a rounded point. Antennæ covered with a pale pubescence; the third joint a little longer than the fourth. Pronotum roundly convex, the sides rounded. Mesothorax shining, obscurely shagreened, covered with a short pale fulvous pubescence, which is longest on the sternum. A shallow central furrow on the mesonotum. Median segment with a gradually rounded slope, obscurely aciculate, the centre furrowed, the sides keeled, the apex with some stout transverse striæ. Metapleuræ covered with a fulvous pubescence, finely rugulose. Petiole narrow, the apex nodose, longer than the second and third segments united. The second segment a little longer than the third. The petiole and the apex of the second segment piceous-red; the sides of the segments covered with a fulvous pubescence. Pygidial area wide, a little longer than broad, bearing large punctures; the apex depressed, impunctate, reddish. Legs covered with a pale pubescence, brownish-testaceous; the coxæ, the trochanters above, the anterior femora above and beneath, the middle femora almost entirely, and the hinder tibiæ behind, blackish; the long spur of the hind tibiæ three-fourths the length of the metatarsus, stout; the metatarsus slightly longer than the following two joints united.

Transverse cubital nervure received distinctly before the middle of the radial cellule.

18. **Crabro maculitarsis.** (Tab. IX. fig. 18, ♀.)

Niger, apice petioli brunneo, tibiis subtus basique tibiarum flavis. ♀.
Long. 8–9 millim.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Head aciculate, covered closely with a blackish pubescence; the cheeks and clypeus with silvery pubescence; the frontal depression glabrous, shining, impunctate; ocelli in a triangle, situated in pits; a narrow furrow in their centre; the frontal furrow narrow and shallow; there is a shallow semicrescentic fovea opposite them almost touching the eyes; hinder ocelli placed slightly behind the eyes, separated from each other by a less distance than they are from the eyes, the latter being fully the length of the third antennal joint; clypeus moderately projecting, carinate down the middle; cheeks normal. Antennæ covered with a pale microscopic pile; the second and third joints as long as the fourth and fifth united. Prothorax transverse, the sides rounded; the angles with an oblique wide furrow on the lower side. Mesonotum coarsely aciculate, opaque, indistinctly and shallowly furrowed down the centre; the mesopleuræ more shining, less strongly longitudinally aciculate; the furrow below the tegulæ is wide and deep, and bears short stout keels. Triangular area of the

median segment shining, minutely aciculate; the central furrow wide, strongly aciculate, deep, but not so wide as the furrow bordering the area; the rest of the segment opaque, transversely aciculated, densely covered with white pubescence. Metapleuræ aciculate, the furrow keeled like the mesopleuræ. Petiole shining, about one-fourth longer than the second segment, becoming gradually thicker towards the apex, which is not nodose*; the rest of the abdomen aciculate, opaque, the segments at the apex and laterally (the last entirely) densely covered with a short golden pile. Pygidial area with a raised triangular space at the base, gradually narrowed to the apex, shining, impunctate, except the basal space. Legs normal.

19. **Crabro jason.** (Tab. IX. fig. 19, hind leg, ♂.)

Niger, subopacus; alis fere hyalinis, nervis nigris. ♀.
Long. fere 7 millim.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Antennæ moderately stout; the third joint distinctly longer than the fourth. Head cubital, longer than wide, concave posteriorly, narrowed behind the eyes; the occiput margined; the clypeus convex, keeled in the centre, the apex broadly rounded. Ocelli in a triangle, the hinder ones separated from each other by a slightly less distance than they are from the eyes. Mandibles broadly yellow, the apex piceous. Thorax alutaceous; the pronotum almost transverse, the apex oblique. Basal area of the median segment longitudinally striolated; a crenulated furrow leading from its apex to the excavated apical portion, which is finely transversely striated. A curved crenulated furrow leads down from the tubercles; and there is a round small fovea at the apex of the mesopleuræ in the middle. Abdomen longer than the thorax, subpetiolate; the petiole becoming gradually thicker towards the apex, shining, impunctate; the apex with a short pile. Legs stout, the posterior tibiæ dilated, especially towards the apex; the long spur of the hind tibiæ reaching nearly to the apex of the metatarsus, which is shorter than the other joints united; the hind tibiæ shorter than the tarsi; the anterior tarsi inclining to piceous in colour.

The male has the antennal joints thicker and more dilated beneath; and the hind tibiæ are more dilated and longer than the tarsi, their base being white.

Subfam. *OXYBELINÆ*.

OXYBELUS.

Oxybelus, Latreille, Hist. Nat. Crust. et Ins. xiii. p. 307 (1805).

Nearly one hundred species are known of this well-marked genus. Two species only have been recorded as yet from south of our region.

* In the table on p. 142, line 10 from top, *for* "petiole nodate at the apex," *read* "petiole nodate or not at the apex."

1. **Oxybelus mexicanus.**

Oxybelus mexicanus, Robins. Trans. Am. Ent. Soc. xvi. p. 83[1].

Hab. Mexico[1].

2. **Oxybelus bugabensis.** (Tab. IX. figg. 20, thoracic process; 20 *a*, lateral view of the same; 20 *b*, thoracic process, var.?)

Niger, linea pronoti, lineis abdominis segmentis 1°–5ᵐ flavis, segmento 6° rufo; alis fusco-hyalinis. ♀.
Long. 5 millim.

Hab. Panama, Bugaba (*Champion*).

Black, with a greenish-coppery hue; the mandibles reddish; the pronotum, tubercles, the scutellar laminæ, a broad line (much contracted in the middle) on the first abdominal segment, a narrower (not contracted) line on the second to the fifth segments, and a line on the base of the middle femora beneath, yellow; the tegulæ piceous; the front tibiæ rufo-testaceous, the spurs pale; the apical abdominal segment piceous-red; wings subhyaline, the nervures fuscous. Head very closely punctured, densely covered with a short pale pubescence; the front slightly depressed in the middle; a not very distinct furrow runs down from the ocelli to the antennæ, where it bifurcates, the forks being wider, deeper, smooth, and shining. Eyes margined. Antennæ stout, densely pilose; the flagellum beneath at the apex brownish. Thorax more strongly punctured than the head, and with the punctures more widely apart. Mesonotum with a wide and deep furrow in the centre in front; and there is a much smaller furrow on either side of this; scutellar keel distinct, the depression at the base of the scutellum wide and deep. Median segment shining, reticulated. There is a wide and deep furrow below the tegulæ on the mesopleuræ, and a shallow fovea behind it. The pubescence on the thorax short, close, and dense; that on the pleuræ longer and whiter. Abdomen shining, finely punctured; pygidial area more strongly punctured, laterally keeled. Legs rather closely pilose; the spines on the hinder tibiæ stout, fuscous towards the apex. Squama broader than long, the sides acutely spined, the apex roundly incised; the spine is twice longer than broad, slightly incised at the apex, hollowed, and rising in a curve upwards, hardly dilated at the tip.

A specimen from Temax is either a variety of *O. bugabensis*, or belongs to a distinct species. It agrees in size and colour with *O. bugabensis*, except that the yellow line on the collar is interrupted, the squama is only yellow laterally, and the yellow band on the first abdominal segment is not dilated at the sides; all the tibiæ are broadly lined with yellow; the pubescence on the face is denser, longer, and bright silvery; the mesonotum is duller, more pubescent, and has a wider and deeper depression. There is also a slight difference in the space of the thoracic process (see fig. 20 *b*).

3. **Oxybelus longispina.** (Tab. IX. fig. 21, thoracic process.)

Niger, linea pronoti, lineis abdominis segmentis 1°–5ᵐ, femoribus tibiisque subtus flavis, abdominis segmento 6° nigro; alis fere hyalinis, nervis stigmateque fusco-testaceis. ♂.
Long. 5½ millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Black, with a slight coppery hue; an interrupted line on the pronotum, the tubercles, the laminæ, a line on the four anterior femora beneath at the base, and a narrow line on the apex of the abdominal segments, yellow; the tibiæ rufo-testaceous, lined with yellow in front; the tarsi obscure testaceous. The lower part of the head covered with a dense silvery, the upper part with a golden pubescence. Clypeus incised, the sides ending in stout teeth. Antennæ densely pilose, the apex brownish. Mandibles piceous-red. Thorax closely punctured, and covered with a whitish pubescence; scutellar keel stout, the scutellum also with a transverse keel at the apex, the space beyond this being depressed and crenulated. Median segment transversely striolated, with a **V**-shaped keel in the centre. Mesopleuræ with a narrow shallow furrow below the tegulæ, and there is a wider transverse furrow at the bottom. Abdomen finely punctured, the basal segments deeply depressed anteriorly; apical segment obscure rufous, punctured, the apex transverse; the segments at the apex bearing a sparse pale pubescence; venter covered with longish pubescence, punctured. Squama with a curved tooth laterally; the spine more than twice longer than broad, becoming broader towards the apex, which is deeply and broadly incised.

4. **Oxybelus aztecus.** (Tab. IX. figg. 22; 22 *a*, thoracic process.)

Niger, lineis 2 pronoti, maculis 10 abdominis, tibiis tarsisque flavis; alis fusco-hyalinis.
Long. 4 millim.

Hab. Mexico, Vera Cruz (*H. H. Smith*).

Black, densely covered with a silvery pubescence; the scape of the antennæ beneath, a broad interrupted line on the pronotum, the tubercles, a small mark on the side of the scutellum, the edges of the laminæ, two lines on the abdominal segments 1–4, the knees, and the four anterior tibiæ in front, yellow; mandibles yellow at the base, piceous in the middle, black at the apex; apex of antennæ rufo-testaceous; tegulæ piceous; apical segment and the apex of the fifth ferruginous; the anterior tarsi rufo-testaceous. Head closely and rather strongly punctured, the pubescence on the lower part long and silvery; clypeus convex; the furrow from the ocelli indistinct. Eyes indistinctly margined in front. Thorax more strongly punctured than the head; the pronotum above transverse, margined, the sides obliquely curved; an indistinct furrow on the mesonotum in front; scutellar keel not very stout. Median segment finely and closely rugose, two keels in the centre, enclosing a **V**-shaped, shining, impunctate area; the edges also keeled. Mesopleuræ with a small shallow depression below the tegulæ. Abdomen punctured; the first segment depressed at the apex, the second at the base

and apex, the third at the apex; the apical segment rugose, covered with depressed, reddish, stiff hairs; the other segments with a silvery pile at the apex laterally. Legs covered with a whitish pubescence; the tibial spines pale; the apical joint of the tarsi testaceous. Squama longer than broad (longer than in any other species known from our region), the lateral edge triangular; the spine not twice longer than broad, the apex incised.

5. **Oxybelus argenteopilosus.** (Tab. IX. figg. 23; 23 *a*, thoracic process.)

Long. $4\frac{1}{4}$ millim. ♀.

Hab. MEXICO, Venta de Zopilote in Guerrero 2800 feet (*H. H. Smith*).

Agreeing with *O. aztecus* in having the bands on the abdomen broken, and also in the rest of the coloration, except that it has a spot on either side of the scutellum, and the hind tibiæ are only yellow at the base, and the hind tarsi are entirely black. It also has a furrow along the inner orbits of the eyes near the ocelli; the mesonotum is without depression; and, as will be seen from our figure, the form of the thoracic process is very different, the squama (and the spine also, this being shorter and broader than in the other species of the genus known to me) much shorter and broader.

Fam. POMPILIDÆ.

The difficulty of defining and limiting the genera in this large family is considerable. The arrangement here adopted is that followed by Kohl, Verh. zool.-bot. Ges. Wien, 1884.

CEROPALES.

Ceropales, Latreille, Préc. Caract. gén. des Ins. p. 123 (1796); Kohl, Verh. zool.-bot. Ges. Wien, xxxiv., Abhandl. p. 51 (1884).

This genus, chiefly on account of the difference in the structure of the male genital armature, is referred by Radoszkowski [Bull. Mosc. nouv. sér. ii. p. 489 (1889)] to a distinct family.

1. **Ceropales agilis.** (Tab. X. fig. 1, ♀.)

Ceropales agilis, Smith, Journ. Ent. ii. p. 269[1].

Hab. MEXICO[1], Amula in Guerrero 6000 feet, Teapa in Tabasco (*H. H. Smith*), Orizaba (*Sumichrast*), Temax in North Yucatan (*Gaumer*); GUATEMALA, San Gerónimo, Capetillo (*Champion*); NICARAGUA, Chontales (*Belt*).

2. **Ceropales albopicta.**

Ceropales albopicta, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 378[1].

Hab. MEXICO, Orizaba (*Sumichrast*[1]); PANAMA (*Boucard*).

3. **Ceropales femoralis.**

Ceropales femoralis, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 378 [1].

Hab. Mexico, Orizaba (*Sumichrast* [1]).

4. **Ceropales mexicana.**

Ceropales mexicana, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 377 [1].

Hab. Mexico, Orizaba (*Sumichrast* [1]).

5. **Ceropales azteca.** (Tab. X. fig. 2, ♀.)

Nigra, flavo-maculata, pedibus fulvis; alis hyalinis, stigmate pallide testaceo. ♀.
Long. 6 millim.

Hab. Mexico, Amula in Guerrero 6000 feet, Atoyac in Vera Cruz (*H. H. Smith*), Temax in North Yucatan (*Gaumer*).

Head shining, aciculate, the cheeks, clypeus, and labrum covered with a silvery pubescence; the ocellar region raised; the anterior ocellus in a pit; the space between and above the antennæ distinctly projecting; the clypeus at the apex slightly arcuate; the labrum rounded, the sides oblique; the eyes at the top arcuate; the ocelli in a curve, the hinder pair separated from each other by a less distance than they are from the eyes; a furrow runs down from them; the occiput convex. Thorax bearing widely separated shallow punctures, the median segment alutaceous; the prothorax arcuate in front, bulging out laterally at the base; scutellum raised, not much narrowed towards the apex. The median segment with a small triangular depression at the base, from which runs a wide channel; broad at the base, narrowed at the apex. Abdomen not much longer than the thorax, sessile, curved. Antennæ stout, a little thickened towards the apex; the joints closely united. Radial cellule elongate, narrow, lanceolate; the second cubital cellule at the top distinctly longer than, at the bottom nearly as long as, the third cellule; the third cellule at the bottom more than twice as long as at the top; the first transverse cubital nervure curved; the first recurrent nervure received in the apical fourth of the cellule—at a little less distance from the apex that the second is received from the base of the cellule. Legs elongate, especially the hind tarsi. Black; the clypeus and face, the inner orbits broadly, the outer orbits narrowly, the edge of the pronotum, the tubercles, a spot on the scutellum, the metanotum, a mark on the median segment in front of the coxæ, an incised elongate spot on the side of the first segment, a transverse one at the apex, a line on the apices of the other segments, incised at the sides in front, the coxæ in front and a line on the hinder pair at the side, and the scape beneath, yellow.

The male is similarly coloured to the female, except that the labrum is yellow, the first abdominal segment has only a somewhat oblong mark at the sides, the lines on the three following segments are broken up into three, and the following two segments have an entire mark in the centre; it has the apical segment wide, broadly incised.

This species may be referable to *C. mexicana*, Cresson; but the latter is stated to have the tips of the femora, the anterior tibiæ in front, the base and apex of the middle tibiæ, and the base of the four anterior tarsi, lemon-yellow; the apex of the median segment with a golden-sericeous pile (in our species silvery); and the wings pale yellowish-hyaline.

6. **Ceropales fumipennis.** (Tab. X. fig. 3, ♂ organ.)

Nigra, clypeo, labro, coxisque anticis albis; alis fusco-fumatis. ♂.
Long. 9 millim.

Hab. Panama, Bugaba (*Champion*).

Eyes large, converging beneath, slightly curved above; ocelli in a curve, separated from each other by a greater distance than they are from the eyes. Head convex behind, closely punctured; a narrow furrow runs down from the ocelli; the clypeus transverse, projecting; the face and cheeks densely covered with a silvery pubescence; the white colour extends halfway up the inner orbits; the palpi fuscous. Antennæ stout; the third joint somewhat longer than the fourth; the scape beneath white and covered with silvery hair. Thorax alutaceous, covered with a silvery pile; the pronotum subquadrate, concave in the middle laterally, anteriorly arcuate; scutellum gibbous, narrowed towards the apex; median segment finely punctured, the apex finely transversely striated. Abdomen shining, sessile, shorter than the thorax; the second segment at the base laterally with a somewhat triangular white spot; the third segment edged with white above; the apical segment also white. Legs very elongate; the coxæ and femora densely covered with white, the tibiæ and tarsi with black, pubescence; the tibiæ and tarsi sparsely spined, the four anterior spines pale, the posterior spines black; the claws reddish, bifid. The second cubital cellule at the top a little longer, at the bottom considerably shorter, than the third cellule; the first and second transverse cubital nervures straight, oblique, the third elbowed about the middle, making the third cellule at the top a little longer than the space bounded by the second transverse cubital and second recurrent nervures; the first and second recurrent nervures received a little before the middle.

In one example the white markings on the abdomen are obliterated, or nearly so; this specimen has the base of the wings and the first cubital cellule subhyaline, and the four anterior spurs blackish.

7. **Ceropales chiriquensis.** (Tab. X. fig. 4, wing.)

Long. 10 millim.

Hab. Panama, David (*Champion*).

Black; the clypeus, the face and orbits broadly, two large marks on the third abdominal segment, the apical segment, and a line on the pronotum behind, white; wings

subhyaline, a band along the basal nervure and a broad one occupying the radial and second and third cubital cellules fuscous. Head shining, finely and closely punctured; the orbits and clypeus bearing a short silvery pubescence; the eyes scarcely arcuate at the top; the apex of the clypeus transverse, the sides rounded; ocelli in a curve, the hinder pair almost opposite the top of the eyes, and separated from each other by a distinctly greater distance than they are from the eyes. Antennæ covered with a close pile; the apical joints curved; the third and fourth joints subequal; the scape brownish beneath. Thorax aciculate, the median segment alutaceous; the apex of the pronotum broadly arcuate; the scutellum narrowed towards the apex, where there is a small white spot; the median segment with a gradual rounded slope. Abdomen sessile, shorter than the thorax. Legs stout, elongate; the tibiæ and tarsi thickly covered with a blackish pubescence; the long spur of the hind tibiæ reaches about the length of the fourth tarsal joint from the apex. Radial cellule round to the apex of the third cubital cellule, then lanceolate; the second cubital cellule at the top slightly longer, at the bottom shorter, than the third; the third cellule at the top not half the length of the bottom; the first recurrent nervure is received before, the second a little beyond, the middle.

8. **Ceropales apicipennis.** (Tab. X. figg. 5, ♂ organ; 5 *a*, wing.)

Hab. Mexico, Jalisco (*Schumann*).

Very similar in coloration and form to *C. chiriquensis*, but differing as follows:—The clypeus is only white at the sides; the mark on the scutellum is larger; there is a white mark on the metanotum; the white band on the third segment is continuous; and there is no cloud at the basal nervure, while the apex of the wing is clouded from near the base of the radial cellule. Easily known otherwise by the scutellum being flatter and hardly narrowed towards the apex; the long spur of the hind tibiæ only reaching a little beyond the middle of the metatarsus; the tarsi not so closely or thickly haired; the radial cellule deeper and rounded from the third cubital cellule (the nervure in *C. chiriquensis* being straight, while here it is curved); the first recurrent nervure received beyond the middle; the pleuræ more densely covered with a silvery pubescence; and also by the somewhat larger size (nearly 11 millim.).

PSEUDAGENIA.

Pseudagenia, Kohl, Verh. zool.-bot. Ges. Wien, xxxiv., Abhandl. p. 42 (1884).
Agenia, Dahlbom, Hymen. Europ. i. p. 454 (nec Schiödte).
Pompilus, Smith, Cat. Hymen. iii. p. 118 (part.).

1. **Pseudagenia cressoni.** (Tab. X. fig. 6, thorax.)

Nigra, fulvo-aureo hirta, basi antennarum, pedibus tegulisque rufo-fulvis, coxis, trochanteribus apiceque tarsorum nigris; alis fere hyalinis, stigmate nigro. ♀.

Long. 8–12 millim.

Hab. MEXICO, Dos Arroyos and Xucumanatlan in Guerrero, Atoyac in Vera Cruz (*H. H. Smith*); GUATEMALA, San Gerónimo (*Champion*).

Black; the head and thorax with a decided greenish hue, and densely covered with a close golden pile; the four or five basal joints of the antennæ and the legs (except the coxæ and trochanters) reddish-testaceous, the tips of the tarsi blackish; wings hyaline, somewhat suffused with fuscous. Head wider than the thorax, slightly convex in front and behind; the clypeus broadly rounded at the apex; the ocelli almost forming a triangle, the hinder ones separated from the eyes by a greater distance than they are from each other; the eyes curved. Antennæ rather long; the third joint about one quarter longer than the fourth. Pronotum subarcuate behind, the sides subconvex, slightly narrowing from the apex to the base. Scutellum finely punctured. Median segment with a gradually rounded slope, obscurely transversely striated. Abdomen shining, subpetiolate; pruinose, especially on the apical segments, these latter having a brownish bloom; pygidium shining, impunctate. Legs moderately elongate; the coxæ bearing a dense greenish or golden pubescence; the long spur of the hind tibiæ not reaching to the middle of the metatarsus. Wings: the second and third cubital cellules subequal at the top, the third somewhat longer at the bottom; the first recurrent nervure received a little beyond the middle, the second nervure received slightly beyond the basal third; radial cellule angled where the transverse cubital nervures are received, the apex acute.

P. subvirescens has the general coloration of *P. cressoni*, including "the beautiful green reflection" of the thorax; but the first-mentioned species has the anterior margin of the clypeus sinuous, the antennæ testaceous (dusky at the tip), the median segment oblique, and the base of the femora black. *P. auripilis* also agrees in some respects with *P. cressoni*, but it has the head and thorax black and the abdomen covered with pale golden-sericeous pubescence.

2. **Pseudagenia curvinervis.** (Tab. X. fig. 7, thorax.)

Long. 12 millim.

Hab. PANAMA, Bugaba (*Champion*).

Very nearly related to *P. cressoni*, and almost identical in coloration, but differing from it as follows:—The legs are entirely fulvo-testaceous, except the apices of the tarsi; the golden pubescence on the clypeus and cheeks is much denser, brighter, and more clearly separated from the rest of the head; the mandibles are rufo-fulvous (not black); the pronotum is bright golden, and behind, instead of forming a shallow uniform curve, it is angled in the middle; the wings are yellower in hue; the first transverse cubital nervure is not oblique and straight, but bent from the base to the apex—bow-shaped; the first recurrent nervure is received in the middle of the cellule.

Above, the greenish hue is not so well marked as it is laterally; the stigma is black. The eyes, ocelli, and pygidium are formed as in *P. cressoni*.

3. **Pseudagenia auripilis.**

Pompilus auripilis, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 373[1].

Hab. Mexico, Orizaba (*Sumichrast*[1]).

4. **Pseudagenia subvirescens.**

Pompilus (*Agenia*) *subvirescens*, Cresson, Trans. Am. Ent. Soc. i. p. 131[1].
Pompilus subvirescens, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 373[2].

Hab. Mexico, Vera Cruz (*Sartorius*[1 2]), Orizaba (*Sumichrast*[1 2]).

5. **Pseudagenia mexicana.**

Pompilus (*Agenia*) *mexicanus*, Cresson, Trans. Am. Ent. Soc. i. p. 130[1].
Pompilus mexicanus, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 372[2].
Pompilus mexicanus, var. *floridus*, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 373[3].

Hab. Mexico, Presidio de Mazatlan (*Forrer*), Amula, Chilpancingo, Dos Arroyos, Omilteme, all in Guerrero, Atoyac in Vera Cruz, Teapa in Tabasco (*H. H. Smith*), Orizaba (*Sumichrast*[2 3]), Vera Cruz (*Sartorius*[1 2]), Temax in North Yucatan (*Gaumer*).

6. **Pseudagenia montezuma.**

Agenia Montezumia (sic), Smith, Journ. Ent. i. p. 397[1]; Cresson, Trans. Am. Ent. Soc. i. p. 132[2].

Hab. Mexico, Oaxaca[1 2].

7. **Pseudagenia chloris.**

Pompilus chloris, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 373[1].

Hab. Mexico, Orizaba (*Sumichrast*[1]).

8. **Pseudagenia incognita.** (Tab. X. fig. 8, ♀.)

Nigra, pedibus fulvis; alis fuscis. ♀.
Long. 8 millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Head finely punctured, wider than the thorax; the front with a shallow furrow; eyes curved at the top, converging beneath; the ocelli in a triangle, the hinder ones separated from the eyes by a greater distance than they are from each other; the clypeus broadly rounded, densely covered with silvery hair; occiput transverse; the palpi fulvous. Antennæ moderately stout, pilose. Pronotum shorter than the head, the sides not narrowed anteriorly. Mesothorax finely punctured, shining. The median

segment opaque, alutaceous, obscurely transversely striated; a broad shallow furrow down the middle; it has a gradually rounded slope to the apex. Legs of moderate length; the fore coxæ black; the long spur of the hind tibiæ reaching a little beyond the middle of the metatarsus; the tarsi slightly spined, the apical joint blackish.

P. incognita may be known from *P. mexicana* by the trochanters not being black, by the wings not being hyaline, and by the body being deep black, without any purple reflections.

9. **Pseudagenia calcarata.**

Pompilus (*Agenia*) *calcaratus*, Cresson, Trans. Am. Ent. Soc. i. p. 128[1].
Pompilus calcaratus, var. *accolens*, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 374[2].

Hab. United States, Connecticut to Illinois[1].—Mexico, Orizaba (*Sumichrast*[2]).

10. **Pseudagenia montivaga.** (Tab. X. fig. 9, wing.)

Cærulea, geniculis late, tibiis tarsisque flavis; alis fere hyalinis.
Long. 12 millim.

Hab. Mexico, Sierra de las Aguas Escondidas in Guerrero 7000 feet (*H. H. Smith*).

Eyes with a distinct curve, converging a little at the bottom. The hinder ocelli separated from the eyes by a distinctly greater distance than they are from each other. Clypeus broadly convex, the apex rounded. Occiput transverse. The eyes reaching to the extreme back of the head. The head opaque, very closely and finely rugose, the cheeks and clypeus densely covered with silvery pubescence; the vertex and outer orbits more sparsely pubescent, and with long pale fuscous hairs. Pronotum very short, broadly arcuate in front, concave behind, the middle with a rather sharp angle. Median segment at the base closely punctured, the rest irregularly transversely striolate. Pro- and mesothorax finely and closely punctured, and covered with a whitish pubescence; the median segment also with a whitish pile, and with rather long pale fuscous hairs. Abdomen shining, almost impunctate, irregularly pruinose; the apical segment shining, impunctate, and with long fuscous hairs; petiole at the base narrowed into a neck, from which it becomes gradually dilated to the apex. Antennæ rather long, moderately stout, not tapering much to the apex, pruinose. Wings: second and third cubital cellules subequal at the top, the third at the bottom a little longer than the second; the first transverse cubital nervure obliquely curved, the second also curved, but not so obliquely, the third roundly elbowed near the bottom; the first recurrent nervure received in the middle, the second in the basal third of the cellule. The coxæ and trochanters bluish; the femora, except at the apex, and the apical joint of the tarsi, black; the spurs blackish, yellowish at the base, not reaching the middle of the metatarsus.

11. **Pseudagenia gentilis.** (Tab. X. fig. 10, head.)

Nigra, dense argenteo-pilosa, femoribus posterioribus rufis, geniculis nigris; alis fere hyalinis. ♀.
Long. 9 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Eyes distinctly converging at the bottom, elbowed at the top. Hinder ocelli separated from the eyes by a distinctly greater distance than they are from each other. Clypeus elongate, convex, the apex somewhat sharply rounded. Head rather short, compared to the breadth, the occiput transverse, the sides rounded, not much developed behind the eyes; finely and closely punctured; covered with long silvery pubescence, more sparsely so on the top. Prothorax short, the sides rounded, narrowed towards the head. Median segment short, gradually rounded, transversely striated; a smooth, shining, finely transversely striolated, fulvous band at its base. The thorax finely and closely punctured; covered with long whitish hairs, which are especially long on the base and apex. Abdomen short, shining, impunctate; the petiole with a distinct neck at the base, from which it becomes gradually dilated to the apex; the apical segment shining, bearing some scattered punctures, the apex testaceous, broadly rounded. Antennæ stout, moderately long, covered with a close microscopic pile; the apical joints brownish beneath. Wings: second and third cubital cellules at the top and bottom subequal; the first and third transverse cubital cellules obliquely curved, the second straight; the first recurrent nervure received slightly before the middle, the second close to the basal fourth. Legs pruinose; the long spur of the hinder tibiæ not quite reaching the middle of the metatarsus.

12. **Pseudagenia isthmica.** (Tab. X. fig. 11, ♀.)

Nigra, nitida, mandibulis, antennis pedibusque anticis rufis; alis hyalinis, fusco-bifasciatis. ♀.
Long. 7 millim.

Hab. PANAMA, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Eyes a little converging above and beneath. Ocelli forming a triangle, the hinder ones separated from the eyes by nearly the same distance they are from each other. Clypeus broadly convex, broadly rounded at the middle. Occiput slightly concave. Head not much developed behind the eyes; closely punctured, densely covered with a whitish pile, and with a few longish hairs on the top; its black colour has coppery tints. Antennæ short, stout; the third joint fully one quarter longer than the fourth; the first joint not much shorter than the fourth. Prothorax as long as the head, the sides broadly rounded, sparsely punctured, densely covered with a fulvous pubescence; mesothorax shining, aciculate, the sides finely punctured. Median segment very finely punctured, broadly rounded, the apex with two large spots of dull fulvous pubescence; the transverse furrow in the mesopleuræ placed below the middle. Abdomen shining, subpetiolate, shorter than the thorax, sparsely pruinose, the apical

segments bearing long black hairs; pygidium broad, shining, without pubescence. Wings: the first cloud is at the basal nervure, the second is twice the width of the first, commences a little behind it, and ends a little before the apex of the radial cellule; the second cubital cellule is subquadrate, at the top about one-fourth longer than the third at the top, at the bottom not so much longer; the first transverse cubital nervure is straight, the second curved; the third cubital cellule is not half so long at the top as at the bottom; the second cubital cellule receives the recurrent nervure a little beyond the middle, the cubital nervure being angled where it joins it; the second recurrent nervure is broadly curved. The legs are short and stout; the coxæ, tibiæ, and tarsi are densely fulvous-pubescent; the femora are sparsely haired; the long spur of the hinder tibiæ does not reach the middle of the metatarsus.

P. nubifer, Cress., agrees closely with this species in coloration; but it has the head and thorax clothed with golden pile, the sides of the pronotum rufous, and the edge of the clypeus truncated.

13. **Pseudagenia championi.** (Tab. X. fig. 12, ♀.)

Nigra, capite thoraceque dense aureo-pilosis, abdomine pedibusque fere cæruleis; alis flavo-hyalinis, fusco-bifasciatis. ♀.

Long. 12 millim.

Hab. Panama, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Black, the head and thorax with a bluish tinge; the head above hidden by golden pubescence; the pro- and mesonotum with golden, the pleuræ and the apex of the median segment with silvery, pubescence; the abdomen from the second segment thickly pruinose. Face and clypeus finely punctured; eyes slightly converging beneath; ocelli small, forming a triangle, the hinder ones separated from the eyes by a slightly greater distance than they are from each other; clypeus broadly rounded at the apex; occiput transverse behind, the sides rounded; the mandibles bearing a few long white hairs. Pronotum arcuate, forming a neck at the base. The scutellum broad, hardly narrowed behind. Median segment with a gradual rounded slope, granular. Abdomen petiolated; the pygidium granular, densely covered with silvery pubescence and with long silvery hair, at the apex with golden-fulvous hairs. Wings: radial cellule lanceolate; the second cubital cellule at the top four times longer, at the bottom shorter, than the third; the third cellule at the top much narrowed, about half the length of the space bounded by the second recurrent and the second transverse cubital nervures; the first transverse cubital nervure elbowed; the first recurrent nervure received before, the second in front of, the middle. Legs long, slender, covered with a silvery pubescence, which is especially thick on the coxæ; the tibiæ and tarsi with a few short spines; the long spur of the hind tibiæ does not reach the middle of the metatarsus; the femora have a bluish tinge. The small first band on the wings

extends along the basal nervure ; the second band from the base of the stigma to the end of the third cubital cellule, beyond which the wing is pale fulvous-hyaline.

14. **Pseudagenia tolteca.** (Tab. X. figg. 14 ; 14 *a*, wing.)

Cærulea ; alis hyalinis, apice fuscis. ♀.
Long. 6–7 millim.

Hab. Mexico, Omilteme in Guerrero 8000 feet, Cuernavaca in Morelos (*H. H. Smith*).

Head wider than the thorax, finely punctured, the face with a whitish pubescence ; eyes distinctly converging beneath ; the ocelli in a triangle, the hinder ones separated from the eyes by a greater distance than they are from each other ; the occiput slightly convex, the sides rounded ; the clypeus smooth and shining, broadly rounded at the apex. Antennæ thin, rather long. Prothorax shorter than the head, the sides rounded. narrowed towards the base, the apex arcuate. The thorax finely punctured, not narrowed towards the apex ; the median segment opaque, alutaceous, the sides densely covered with white pubescence, almost black, as are also the pleuræ, these being also opaque. Abdomen of a much brighter blue colour than the thorax, shining, pruinose towards the apex ; pedunculated, the base narrow, the apex sharply pointed ; the pygidium bearing long black hair, finely punctured, dull fulvous towards the apex. Legs long and slender ; the long spur of the hind tibiæ does not reach the middle of the metatarsus.

15. **Pseudagenia nubifer.**

Pompilus nubifer, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 374 [1].

Hab. Mexico, Orizaba (*Sumichrast* [1]).

16. **Pseudagenia cærulipes.**

Agenia cærulipes, Smith, Journ. Ent. i. p. 397 [1].

Hab. Mexico, Orizaba [1].

17. **Pseudagenia azurea.**

Pompilus (*Agenia*) *azureus*, Cresson, Trans. Am. Ent. Soc. i. p. 131 [1].

Hab. Mexico, Vera Cruz (*Sartorius* [1]).

18. **Pseudagenia collina.** (Tab. X. fig. 13, ♀.)

Azurea, antennis pedibusque nigris ; alis hyalinis, fusco-bifasciatis. ♀.
Long. 10 millim.

Hab. Guatemala, El Tumbador 2500 feet (*Champion*).

Eyes slightly converging beneath. Ocelli in a triangle, the hinder ones separated from the eyes by a somewhat greater distance than they are from each other. Clypeus

not very convex, the apex almost transverse. Head narrow, closely punctured, the face with a close white pubescence, the other part with the pubescence shorter and sparser; occiput transverse, rounded at the sides. Prothorax not quite so long as the head, the sides rounded, almost transverse behind. Median segment a little shorter than the mesothorax, having a gradual rounded slope; the oblique furrow in the mesopleuræ distinct, narrow. The pro- and mesothorax are finely and very closely punctured; the median segment is granular, covered with a white pubescence, and has two rounded spots of pubescence at the apex. Antennæ rather long, filiform, pruinose. Abdomen shining, petiolate, pruinose towards the apex; the pygidium finely punctured, and bearing on the apical three-fourths a dull fulvous depressed pile. The fore wings have a narrow fascia along the basal nervure; the apex is clouded from the base of the radial cellule; the second cubital cellule at the top is nearly one-fourth longer than the third, at the bottom it is shorter; the first transverse cubital nervure is elbowed, the second straight and oblique, the third curved; the radial cellule in the middle is as wide as the length of the second cubital cellule at the top. Legs elongate, pruinose, the femora with a bluish tinge; the long spur of the hinder tibiæ reaches the middle of the metatarsus.

19. **Pseudagenia levipes.**

Pompilus levipes, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 374[1].

Hab. Mexico, Orizaba (*Sumichrast*[1]).

20. **Pseudagenia perdita.** (Tab. X. fig. 16, wing.)

Nigra, longe pilosa; alis fuscis. ♀.
Long. 9 millim.

Hab. Mexico, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Eyes distinctly converging beneath. Ocelli in a triangle, the hinder ones separated from each other by half the distance they are from the eyes. Clypeus convex, depressed at the base, broadly rounded at the apex. Occiput transverse. Head stout, broad, finely punctured, not much developed behind the eyes. Antennæ moderately stout, obscurely pruinose. The cheeks and clypeus densely, the rest of the head more sparsely, covered with a silvery pubescence and with long blackish hair. Thorax alutaceous; the median segment granular, furrowed down the middle. Prothorax short, roundly narrowed towards the head; median segment gradually rounded at the apex; mesopleural furrow distinct. The thorax is covered with long pale fulvous hair, which is especially long on the sternum. Abdomen shorter than the thorax, shining, subpetiolate, pruinose, the apical segments bearing long fuscous hair; the pygidium shining, impunctate, without pubescence. Wings: radial cellule wide, angled where the nervures are received; the second cubital cellule at the top and

bottom shorter than the third; the first transverse cubital nervure obliquely curved, the second straight, the third sharply oblique, elbowed at the bottom; the first recurrent nervure is received just beyond the middle, the second beyond the basal third. Legs long, pruinose, the tarsi with a fulvous pile; the long spur of the hind tibiæ does not reach the middle of the metatarsus.

21. **Pseudagenia extrema.** (Tab. X. fig. 15, wing.)

Long. 6 millim. ♂.

Hab. MEXICO, Sierra de las Aguas Escondidas in Guerrero 9500 feet (*H. H. Smith*).

Similar to *P. perdita*, but easily separated by the second and third cubital cellules at the top being subequal, the top of each, too, not being very much narrower than the bottom, the cellules being thus wider than long; the first recurrent nervure is received near the apex of the cellule; the third transverse cubital nervure is curved and not elbowed at the bottom; the ocelli are more widely apart, and are separated from the eyes by only a little greater distance than they are from each other; and the wings from the base of the radial cellule are much darker than the basal region. Eyes almost parallel. Clypeus broadly rounded. Occiput slightly concave. Antennæ stout, covered with a microscopic pile; the joints not clearly separated. Prothorax large, subquadrate, the sides bluntly rounded, not much narrowed in front. Thorax alutaceous; the median segment minutely rugose, shining, not furrowed down the middle, and with a gradual rounded slope. Mesopleural furrow placed above the middle. The head and thorax bear long fuscous hairs.

P. levipes is a near ally of this species, but may be known from it by the second transverse cubital cellule being subconical, pointing towards the base of the wings, the third nearly quadrate and receiving the recurrent nervure in the middle, &c.

22. **Pseudagenia teapæ.** (Tab. X. fig. 17, wing.)

Nigra, tibiis tarsisque anticis pallide fuscis; alis hyalinis, apice fere fumatis. ♂.
Long. 6 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Head finely and closely punctured; the face and cheeks from a little above the antennæ covered with a dense white pubescence; eyes curved above, converging a little beneath; ocelli in a curve, the hinder ones separated from each other by a little less distance than they are from the eyes; clypeus with the sides oblique, straight, the centre very slightly roundly-concave at the apex; the occiput slightly concave in the centre; a narrow channel runs down from the ocelli. Prothorax deeply arcuate in front; obliquely narrowed from the tegulæ. The thorax above alutaceous, the scutellum and pleuræ finely punctured; the scutellum narrowed towards the apex; the median segment sharply oblique to the apex, which again has an oblique slope.

Abdomen shorter than the thorax, subpetiolate. Legs moderately stout, pilose; the spurs stout, the long spur on the hinder tibiæ reaching a little beyond the middle of the metatarsus. Antennæ moderately stout, the middle joints slightly dilated. Wings: the second cubital cellule at the top and bottom a little longer than the third; the first and third transverse cubital nervures curved, the second almost straight; the first recurrent nervure received close to the centre, the second in the apical fourth of the cellule; the lanceolate cellule wide, the apex lanceolate.

23. **Pseudagenia utilis.**

Long. 6 millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Similar in coloration to *P. teapæ*, but smaller; the fore tibiæ and tarsi black; the median segment much more rounded, the basal half not having such a sharply oblique slope; the second cubital cellule at the top and bottom distinctly shorter than the third; the recurrent nervures both received before the middle of the cellule; the basal nervure not interstitial; the long spur of the hind tibiæ not reaching the middle of the metatarsus. Eyes scarcely arcuate at the top, converging beneath; ocelli almost forming a triangle, the posterior ones separated from the eyes by a distinctly greater distance than they are from each other. Clypeus convex, transverse at the apex, the sides rounded. The head has a slight bluish tinge; it is finely and closely punctured, and has a sparse white pubescence on the face; the occiput is slightly convex. Pronotum arcuated behind, gradually narrowed from the apex. Thorax above alutaceous; the pleuræ and scutellum finely punctured; the scutellum broad, flat; the median segment elongated, with a gradual slope. Abdomen short, petiolate; the pygidium covered with long fuscous hairs. Legs pruinose, elongate, slender; the long spur of the hind tibiæ not reaching the middle of the metatarsus; the tarsi thickly covered with stiff pubescence. The second and third transverse cubital cellules are broadly curved; the second cubital cellule is much narrowed at the top.

24. **Pseudagenia relativa.**

Nigra, ore, palpis, scapo antennarum subtus, linea pronoti, coxis, trochanteribusque anticis flavis, pedibus dimidio basali abdominisque rufis; alis hyalinis. ♂.

Long. 7 millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Eyes slightly converging beneath. Hinder ocelli separated from the eyes by a somewhat greater distance than they are from each other. Clypeus slightly convex, the apex broadly rounded; the labrum projecting, its apex rounded. Occiput transversely rounded. Head densely covered with a rather long whitish pubescence; the front aciculate; a furrow runs down from the ocelli. Thorax aciculate, covered with a

whitish pubescence; the pronotum a little shorter than the head, the sides rounded and narrowed in front. Median segment elongate, with a gradual slope to the apex, the centre finely transversely striated. Petiole narrow, becoming gradually dilated from the base to the apex, without a neck; the extreme base black. The basal three segments of the abdomen rufo-testaceous; the other segments pubescent, narrowly edged with yellow at the apex, the apical segments more or less testaceous. Antennæ stout, moderately elongate, and covered with a microscopic pile, the apical joints brownish beneath. Wings: the second cubital cellule considerably shorter than the third at the top and bottom; the first transverse cubital nervure curved, a little oblique, the second almost straight; the first recurrent nervure received slightly before the middle, the second in the basal third of the cellule. Legs elongate; the long spur of the hind tibiæ three-fourths the length of the metatarsus.

25. **Pseudagenia orbiculata.**

Agenia orbiculata, Smith, Journ. Ent. i. p. 397 [1].

Hab. Mexico [1].

26. **Pseudagenia azteca.**

Nigra, abdominis basi late rufa, calcaribus albis; alis fusco-hyalinis, stigmate fusco. ♂.
Long. 5 millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Head alutaceous, the lower half densely covered with white pubescence. Eyes slightly curved, converging beneath; ocelli not in a triangle, the hinder ones separated from each other by the same distance they are from the eyes; a narrow furrow runs down from them. Clypeus broadly rounded from the base. Occiput almost transverse. Prothorax arcuate behind, somewhat acute in the middle; elongate, sharply narrowed from the middle towards the apex. Scutellum broad, finely punctured, not much narrowed towards the apex. Median segment with a gradual rounded slope. The thorax alutaceous, densely covered with a short white pubescence. Abdomen as long as the head and thorax united, the base petiolate; the first (except at the extreme base), second, and third, and part of the fourth, segments rufous; the apical segment with a pale pubescence. Wings: radial cellule wide, slightly angled where the transverse cubital nervures are received, the apex acutely oblique; the second cubital cellule at the top and bottom shorter than the third; the first transverse cubital nervure broadly curved, the third oblique, with a slight curve; the first recurrent nervure received in the basal third, the second beyond the middle. Legs moderately slender; the fore knees testaceous; the long spur of the hind tibiæ more than three-fourths the length of the metatarsus. Antennæ stout, densely pilose; the third and fourth joints subequal.

P. macer, Cresson, appears to resemble this species considerably; but it has the

second and third cubital cellules of equal size, the legs piceous-black (with, I presume, black spurs), the antennæ fuscous, and the tegulæ dull testaceous.

27. **Pseudagenia melanocephala.** (Tab. X. fig. 18, ♀.)

Ferruginea, fronte et vertice nigris; alis lacteis, fusco-bifasciatis. ♀.
Long. 8 millim.

Hab. Mexico, Atoyac in Vera Cruz (*H. H. Smith*).

Head broader than the thorax, finely punctured; the top with a fine close pile; the cheeks and clypeus with long white pubescence. Eyes coarsely faceted, curved above, converging beneath; the ocelli in a curve, the hinder ones separated from the eyes by a little less distance than they are from each other. Clypeus short, broadly rounded. Occiput concave. Thorax finely punctured; the pronotum short, with a gradual slope from the apex, which is widely arcuate. Scutellum slightly narrowed towards the apex. Median segment more strongly punctured than the mesothorax, obscurely furrowed down the centre, and with a gradual rounded slope to the apex; the curved metapleural furrow moderately deep. Abdomen about as long as the head and thorax united, shining, the petiolated part of the basal segment short; the apical segments bearing long fulvous or pale hairs; the ventral segments also having long pale hairs. Legs comparatively stout, pilose; the tarsi with a few minute spines; the long spur of the hind tibiæ does not reach the middle of the metatarsus. Wings shorter than the body; the first cloud is somewhat oblique and extends along the basal nervure, the second reaches from the first to the third transverse cubital nervures; the base of the stigma is fulvous; the second cubital cellule at the top is a little longer, at the bottom shorter, than the third; the first recurrent nervure is received in the middle, the second not far from the base of the cellule. The antennæ are stout, involute; the third joint distinctly longer than the fourth; the apical six joints are black.

28. **Pseudagenia tabascoensis.** (Tab. X. figg. 19, ♂; 19 *a*, ♂ organ.)

Ferruginea; alis fere hyalinis, fusco-bifasciatis, stigmate pallide testaceo. ♂.
Long. $6\frac{1}{2}$ millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Head closely, finely, uniformly punctured; the face with a sparse pale pubescence. Eyes curved above, distinctly converging beneath; the ocelli forming a triangle, the hinder ones separated from each other by a much less distance than they are from the eyes. Clypeus short, broad; the apex almost transverse. Occiput roundly convex. Antennæ moderately stout; the third and fourth joints subequal; the apical two joints black. Pronotum arcuate behind, gradually narrowed towards the base. Scutellum broad, not narrowed towards the apex; the median segment with a gradual slope to the apex, somewhat elongate. The thorax coarsely aciculate; the pleuræ with a

white pubescence. Abdomen with the basal segment narrowly petiolate from the base to the apex, this segment being much thinner than the others; all the segments shining, impunctate. Legs elongate, bearing a microscopic pile; the long spur of the hind tibiæ reaching beyond the middle of the metatarsus. Wings: radial cellule wide, slightly angled where the transverse cubital nervures are received; the apical abscissa oblique, somewhat curved towards the apex; the second cubital cellule quadrate, much shorter than the third; the first and second transverse cubital nervures oblique, straight; the first recurrent nervure is received in the middle, the cubital nervure being angled there, the third in the basal fourth.

SALIUS.

Salius, Fabricius, Syst. Piez. p. 124 (1804); Kohl, Verh. zool.-bot. Ges. Wien, xxxiv., Abhandl. p. 43 (1884).
Priocnemis, Schiödte in Kröyer's Nat. Tidskr. i. p. 321 (1837).
Hemipepsis, Dahlbom, Hymen. Europ. i. p. 462.
Pallosoma, Lepeletier de Saint-Fargeau, Hist. Nat. Ins., Hymen. iii. p. 492.
Mygnimia, Smith, Cat. Hymen. iii. p. 181.

i. *The claws with one tooth; the hind tibiæ usually serrate.* (Priocnemis.)

1. Salius panamensis.

Niger, dense aureo-hirsutus; abdomine fulvo, nigro-lineato, pedibus ferrugineis, coxis trochanteribusque nigris; alis fere hyalinis, nervis fuscis. ♀.
Long. 18 millim.

Hab. PANAMA, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Clypeus convex, broader than long, the sides obliquely truncated, the centre almost transverse and with a distinct margin. Eyes reaching to near the base of the mandibles; curved towards the top, where they approach nearer to each other than they do at the bottom. Hinder ocelli separated by about half the distance they are from the eyes. Antennæ long, tapering towards the apex, filiform, involute; the third joint nearly twice the length of the first and distinctly longer than the fourth. Pronotum with the sides convexly rounded; the hinder border slightly and broadly curved; the base with a rounded slope towards the head; in length nearly as long as the head. Median segment with a rounded slope, the surface granular, a shallow furrow down the centre. Abdomen shining, hardly aciculate at the base, distinctly so towards the apex; apical segment densely covered with bright ferruginous, depressed, bristly hair; the second to the fifth segments with a short golden pile at the apex. Wings: second cubital cellule at the bottom a little shorter than the third at the top, but considerably shorter than the third at the bottom, the nervures roundly curved; the first recurrent nervure is received in the apical fourth of the cellule, the second before the middle. The tibiæ serrate, the spines moderate; the long spur not reaching the middle of the metatarsus. Head

and thorax black, alutaceous; the clypeus, except a broad band in the middle and a broad irregular line along the inner orbits reaching to near the ocelli, and the mandibles, except at the apex, pale yellow, densely covered with a golden pile, and with long pale hairs. Thorax densely covered with a golden pile and more or less with long pale fulvous hair. Abdomen at the base pruinose, at the apex covered densely with a short golden pile; the anterior portion of the three or four basal segments more or less black. Wings varying from almost hyaline to having a fulvo-fuscous tint. Tegulæ rufous.

The pubescence in this species is denser and of a distinctly brighter golden hue than in *S. cincticornis*; the antennæ are entirely black; the clypeus is broadly yellow laterally (while in *S. cincticornis* it bears only a small mark); there is no yellow behind the orbits.

2. **Salius sartorianus.**

Pompilus (*Priocnemis*) *sartorianus*, Cresson, Trans. Am. Ent. Soc. i. p. 120[1].

Hab. Mexico, Venta de Zopilote in Guerrero (*H. H. Smith*), Vera Cruz (*Sartorius*[1]).

3. **Salius cincticornis.**

Pompilus (*Priocnemis*) *cincticornis*, Cresson, Trans. Am. Ent. Soc. i. p. 120[1]; Proc. Bost. Soc. Nat. Hist. xii. p. 372[2].

Hab. Mexico, Vera Cruz (*Sartorius*[1 2]), Orizaba (*Sumichrast*[2]); Guatemala, Purula in Vera Paz (*Champion*).

4. **Salius neotropicalis.** (Tab. X. figg. 20, ♀; 20 *a*, head.)

Niger, medio antennarum, orbitis oculorum, margine pronoti, maculis 5 mesonoti, maculis abdominisque flavis; pedibus rufo-fulvis, coxis femoribusque subtus flavis, femoribus supra nigro-lineatis; alis hyalinis, nervis nigris. ♀.

Long. 17 millim.

Hab. Panama, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Clypeus moderately convex, the apex roundly projecting in the centre, the edges forming a rather thick triangular tooth; the sides obliquely truncated. Eyes touching the base of the mandibles, almost parallel, the space between at the top not much narrower than at the bottom. Hinder ocelli separated from the eyes by more than twice the distance they are from each other. Antennæ filiform, microscopically pilose. Pronotum rounded in front, broadly and roundly concave behind. Median segment short, rounded, the central furrow distinct. Black, the head and thorax opaque, alutaceous; the sixth antennal joint entirely, the fourth broadly at the apex, and the fifth at the base, yellow; the inner orbits broadly, the outer orbits more narrowly at the top and bottom, the clypeus broadly at the sides, the mandibles (except at the apex), the edges of the prothorax all round (except in the middle in front), the tegulæ, a mark in the centre of the mesonotum, the middle of the scutellum, a mark on the

metanotum, two marks on the mesopleuræ behind (the lower one the larger), a mark on the lower and anterior end of the metapleuræ, and a large mark on the side of the abdominal segments, yellow. The ventral surface for the greater part obscure yellow; the apical segment densely covered with depressed, stiff, ferruginous pubescence. Wings clearly hyaline, the nervures black; the second cubital cellule above a little longer than the space bounded by the second transverse cubital and second recurrent nervures, at the bottom a little longer than the top of the third cellule; the first recurrent nervure received in the apical third of the cellule, the second a little beyond the basal third. The head bears a short, sparse, silvery pubescence and long, soft, silvery hair; the pubescence on the thorax is very sparse; the pleuræ and median segment are clothed with longish pale hairs. Tibiæ doubly serrate; the long spur of the hind pair does not reach the middle of the metatarsus.

5. **Salius velox.** (Tab. X. fig. 21, ♀.)

? *Priocnemis velox,* Smith, Journ. Ent. i. p. 398 [1].

Ferrugineus, capite nigro, ore rufo; alis flavo-hyalinis, fusco-trifasciatis. ♀.
Long. 11–12 millim.

Hab. Mexico, Xucumanatlan 7000 feet, Omilteme 8000 feet, both in Guerrero (*H. H. Smith*), Oaxaca [1].

Eyes parallel, if anything converging at the bottom. Ocelli forming almost a triangle, the hinder ones separated from the eyes by nearly twice the distance they are from each other. Occiput slightly convex behind, the sides broadly rounded. Clypeus short, broad, rounded at the apex, the middle being slightly arcuate. Head sparsely covered with longish pale hairs; apparently alutaceous. Thorax granular, sparsely covered with short white hairs. Pronotum shorter than the head, broadly rounded in front; behind with the curve rather sharp in the centre. There is a broad oblique furrow at the end of the mesopleuræ, and a shorter, narrower, somewhat oblique one runs to the middle from the pronotum. Median segment not much shorter than the mesothorax, broadly rounded; the central furrow shallow. Abdomen as long as the thorax, shining, almost impunctate; the petiole black at the base, narrow, becoming gradually wider towards the apex. The apical segments bear longish fuscous hairs; pygidial area shining, convex, densely covered with golden hair. Antennæ stout, pruinose; the apical eight joints black. Wings: second cubital cellule at the top twice the length of the third at the top, at the bottom a little shorter than the third; first recurrent nervure received in the apical third of the cellule, the second beyond the basal third. Legs pruinose; the tibiæ serrate, the long spur not reaching the middle of the metatarsus; the coxæ and trochanters at the base above, and the greater part of the femora, black. Pleuræ and apex of the median segment black. The apex of the clypeus, mandibles, and palpi dull ferruginous.

It is doubtful if the specimens described are really referable to *S. velox* (Smith), which has only "a fuscous fascia and the tips fuscous;" but in other respects they agree closely with it. The species is probably a variable one, as the specimen from Omilteme wants the black on the pleuræ, apex of median segment, and legs, and only the five apical joints of the antennæ are black.

6. **Salius omiltemius.** (Tab. X. fig. 22, wing.)

Niger, basi antennarum, tibiis tarsisque rufo-testaceis, capite aureo-piloso; alis flavis, fusco-trifasciatis. ♀. Long. fere 12 millim.

Hab. Mexico, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Head, except on the clypeus, densely covered with a golden pubescence; eyes almost parallel; the ocelli in a triangle, the hinder ones separated from the eyes by nearly twice the distance they are from each other; clypeus punctured, the apex broadly rounded; the mandibles broadly red in the middle, the extreme apex black; the occiput transverse. Antennæ stout; the basal two joints reddish, the third joint distinctly longer than the fourth. Pronotum shorter than the head, the sides rounded, narrowing towards the base; the apex arcuated; the apex and base, and the pleuræ, with golden pubescence, that on the pleuræ long. Mesonotum aciculate; the scutellum broad, finely punctured, flattish, hardly narrowed towards the apex; the basal half of the median segment with an oblique rounded slope, the apical half straight, oblique; the surface transversely aciculate, covered with a short fulvous pile. The mesopleuræ impunctate, shining, the oblique furrow complete; the metapleuræ strongly aciculate. Abdomen longer than the head and thorax united; a broad brownish-red transverse mark on the second segment; the pygidium apparently coarsely rugose, thickly covered with long dull rufous hairs; the apical ventral segments brownish-rufous at the apex and covered with long fuscous hairs. Tibiæ thickly and stoutly serrate, the long spur of the hind pair reaching a little beyond the middle of the metatarsus; the apices of the tarsal joints black; the claws with one straight spine before the curved apex. Wings: the first cloud is along the basal nervure; the second (and broader) cloud is along the second cubital cellule, and extends the entire breadth of the wing; the apical (and narrowest) cloud commences at the end of the stigma; the second cubital cellule at the top is longer, at the bottom shorter, than the third; at the bottom the second cellule is shorter than at the top, owing to the second transverse cubital nervure being elbowed obliquely at the bottom, and it is angled before the middle, where the recurrent nervure is received; the first transverse cubital nervure is obliquely curved, the third straight at the bottom, obliquely rounded at the top; the second recurrent nervure is roundly elbowed above the middle.

7. **Salius trifasciatus.** (Tab. X. figg. 23, ♂; 23 *a*, male organ.)

Niger, geniculis, tibiis tarsisque rufis; alis flavo-hyalinis, fusco-trifasciatis. ♂.
Long. 6–7 millim.

Hab. MEXICO, Sierra de las Aguas Escondidas in Guerrero 9500 feet (*H. H. Smith*).

Head almost opaque, very finely punctured; sparsely covered with rather long blackish hairs, the clypeus thickly clothed with dull whitish pubescence; eyes straight, diverging beneath; the ocelli in a triangle, the hinder ones separated from the eyes by a much greater distance than they are from each other; clypeus with the sides broadly rounded, the apex in middle almost transverse; the occiput concave. Antennæ nearly as long as the body, pubescent; the third joint longer than the fourth. Pronotum subquadrate, very slightly narrowed from the apex to the base, the apex projecting bluntly in the middle. Median segment rather long, having a gradual slope to the apex; very finely and closely punctured. Abdomen as long as the thorax, subsessile; the apex bluntly rounded, pilose. Legs rather long, indistinctly spined; the long spur of the hind tibiæ reaching somewhat beyond the middle of the metatarsus; the tarsi very long, the joints black at the apex; the claws simple. Wings rather long; the radius curved from the base to the apex; the second cubital cellule at the top longer, at the bottom shorter, than the third; the first transverse cubital nervure curved, the second sharply elbowed near the bottom, the third bluntly so above the middle; the first recurrent nervure received almost in the centre of the cellule, the second before the middle.

8. **Salius rupex.**

Pompilus rupex, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 372[1].

Hab. MEXICO, Orizaba (*Sumichrast*[1]).

9. **Salius rufospina.** (Tab. X. fig. 24, wing.)

Niger, argenteo-pruinosus, femoribus tibiisque rufis; alis hyalinis, apice fumatis. ♀.
Long. 11 millim.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Head a little wider than the thorax; the front and vertex opaque, alutaceous; from a little above the antennæ densely covered with a silvery pile; eyes slightly curved and converging above, at the bottom straight, parallel; the ocelli not quite forming a triangle, the hinder ones separated from each other by a somewhat less distance than they are from the eyes; clypeus short, bluntly rounded to the apex. Pronotum subquadrate, bluntly arcuate behind, almost transverse; the scutellum broad, not narrowed behind, convex; the median segment short, gradually rounded at the apex, opaque, alutaceous. Abdomen a little longer than the head and thorax united, subpetiolate, the sides silvery-pruinose; the pygidium apparently rugose, densely

covered with a long, dull, fulvous pubescence. Legs pruinose; the tibiæ serrate, the long spur of the hind pair not reaching to the middle of the metatarsus; the tarsal spines rufous; the spine on the hind claw short and thick. Wings: radial cellule narrow, elongate, lanceolate; the second cubital cellule very short, narrowed at the top, at the top and bottom less than half the length of the third; the first recurrent nervure received a little behind, the second in front of, the middle of the cellule. The antennæ densely pruinose; the third joint much longer than the fourth.

10. **Salius juno.**

Niger, antennarum articulis 1°–3ᵐ pedibusque rufis, coxis trochanteribus apicibusque tarsorum nigris; alis hyalinis. ♀.

Long. 9 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Head not much broader than the thorax, closely punctured, the face and clypeus densely covered with a white pubescence; the eyes distinctly curved at the top and converging at the bottom; the ocelli in a curve, the hinder ones separated from the eyes by a slightly greater distance than they are from each other; clypeus margined, broadly rounded; occiput slightly convex. Pronotum shorter than the head; the sides oblique; the apex shallowly arcuate, not rounded, but somewhat angled in the middle. Thorax opaque, alutaceous; the median segment also opaque, the apex obscurely transversely striated, short, with rather an abruptly rounded slope. Abdomen with the petiole somewhat shorter than the head and thorax united; the sides pruinose in the middle; the apical segment densely covered with a pale fulvous pubescence and with long white hair. Tibiæ serrate, the spur of the hind pair short, not reaching to the middle of the metatarsus; the tarsi sparsely spined. Antennæ short, stout; the apical joints brownish. Wings comparatively short; the radial cellule angled where the transverse cubital nervures are received; the second cubital cellule at the top and bottom shorter than the third, the top considerably shorter than the bottom; all the transverse cubital nervures are curved; the first recurrent nervure is received a very little beyond the middle, the second almost in the middle.

11. **Salius angustithorax.**

Priocnemis angustithorax, Tasch. Zeitschr. f. ges. Naturw. xxxiv. p. 39 [1].

Hab. Mexico [1].

12. **Salius flammipennis.**

Pompilus flammipennis, Smith, Cat. Hymen. iii. p. 155 [1]; Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 371 [2].

Pompilus (*Priocnemis*) *flammipennis*, Cresson, Trans. Am. Ent. Soc. i. p. 119 [3].

Pompilus ignipennis, Cresson, Proc. Ent. Soc. Phil. iv. p. 121 [4].

Hab. Mexico (*Sallé*), Northern Sonora (*Morrison*), Ciudad in Durango 8100 feet (*Forrer*), Amula 6000 feet, Xucumanatlan 7000 feet, Tierra Colorada, 2000 feet, and Acapulco, all in Guerrero (*H. H. Smith*), Orizaba (*Sumichrast* [2]); Guatemala, El Tumbador, San Gerónimo (*Champion*); Panama, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).—West Indies, Cuba [3], San Domingo [1 3].

S. flammipennis varies greatly in size—from 4–12 lines; it is a common species in Central America.

13. **Salius smithi.** (Tab. X. fig. 25, head.)

Niger; alis fulvis, nervis flavo-fulvis.
Long. 15 millim.

Hab. Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Head opaque, coarsely alutaceous; the top with a few long hairs; the cheeks with a thick patch of dull greyish-white pubescence; eyes not curved at the top, straight, diverging below; the ocelli in a triangle, separated from the eyes by a much greater distance than they are from each other; there is a short, shining, straight furrow above the antennæ; clypeus projecting, the apex broadly rounded, shining, and punctured; occiput transverse. Antennæ comparatively short, stout; the third joint distinctly longer than the fourth. Thorax opaque, alutaceous, sparsely covered with black pubescence. The prothorax shorter than the head, rounded and narrowed from the apex to the base; the apex arcuate, but not forming a completely rounded curve. Scutellum moderately convex, finely punctured, not narrowed towards the apex. The median segment with a gradually rounded slope. Abdomen shining, subsessile, thinly covered with long hairs; longer than the head and thorax united; the pygidium rugose, thickly covered with dull fuscous hair. Tibiæ serrate, the long spur of the hind pair not reaching to the middle of the metatarsus; the tarsi thickly spined; the tooth on the claws stout, placed near the base; the fore spurs testaceous. Wings: radial cellule long, narrow, lanceolate; the second cubital cellule narrower at the top and bottom than the third, the top and bottom about equal in length; the first transverse cubital nervure straight, the second elbowed a little below the middle, the third also elbowed.

14. **Salius alpestris.** (Tab. X. figg. 26, wing; 26 *a*, male organ.)

Long. 7 millim. ♂.

Hab. Mexico, Sierra de las Aguas Escondidas in Guerrero 9500 feet (*H. H. Smith*).

Similar in coloration and texture of body to *S. smithi*; but easily known from it by the long spur of the hind tibiæ reaching distinctly beyond the middle of the metatarsus, the second cubital cellule at the top twice the length of the third, and the apex of the clypeus transverse, and also by its much smaller size. Eyes diverging beneath, straight. The ocelli not forming a triangle, the hinder ones separated from the eyes

by a distinctly greater distance than they are from each other; an indistinct furrow runs down from them. Clypeus with the sides obliquely truncated; the apex transverse. Pronotum very slightly narrowed from the apex to the base; arcuate behind, but not rounded in the middle. Median segment with a gradually rounded slope. Abdomen shorter than the head and thorax united; shining, compared to the thorax, which is alutaceous; the apex thickly haired. For alar neuration, see Tab. X. fig. 26.

15. **Salius guatemalensis.** (Tab. X. fig. 27, head.)

Niger, pruinosus; alis hyalinis, antice late violaceis. ♀.
Long. 13 millim.

Hab. GUATEMALA, El Reposo 800 feet (*Champion*).

Eyes almost parallel, very slightly converging at the top, reaching near to the base of the mandibles. Ocelli almost forming a triangle, the hinder ones separated from the eyes by a little greater distance than they are from each other. Clypeus elongate, obliquely narrowed towards the apex, which is subtransverse. Head narrow, a little concave behind; below the antennæ densely covered with a silvery pile; above the antennæ more sparsely pilose and bearing long pale hair, this being also the case behind. Mandibles elongate, shining, the apex piceous. Thorax opaque, alutaceous. Pronotum moderately elongate, fully as long as the head. Median segment with a rather sharply rounded slope; its central channel rather broad; the base bearing a silvery pubescence; and there are two round spots of silvery pubescence at the apex. Antennæ as long as the head and thorax united; pruinose. Abdomen with a distinct petiole at the base; shining, pruinose, the apical segment thickly clothed with blackish hairs, these being rufous at the apex. Wings: second cubital cellule subquadrate, considerably shorter than the third; the first transverse cubital nervure sharply oblique, the second straight; the first recurrent nervure received in the apical third, the second distinal before the middle. Legs elongate, pruinose; the tibial spines sharp, elongate; the long spur of the hind tibiæ not reaching to the apex of the metatarsus; the middle tooth of the claw short, sharp.

16. **Salius lævis.**

Priocnemis lævis, Smith, New Sp. Hymen. p. 157 [1].

Hab. COSTA RICA, Caché, Volcan de Irazu 6000 to 7000 feet [1] (*Rogers*).

17. **Salius centralis.** (Tab. XI. fig. 1, wing.)

Niger, longe albo-pilosus, abdomine 10-maculato; alis hyalinis, apice fumatis. ♀.
Long. 16 millim.

Hab. PANAMA, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Eyes almost parallel, a little converging at the top, reaching near to the base of the

mandibles. Ocelli hardly forming a triangle, the hinder ones separated from the eyes by one and a half times the distance they are from each other. Clypeus broadly convex; the middle and sides projecting in a blunt point, the intermediate space being roundly incised. Head closely punctured, covered with longish white hair; almost transverse behind, the sides rounded; mandibles at the base covered with a pale pile. Antennæ elongate, also covered with a pale pile; the third joint about one quarter longer than the fourth. Pro- and mesonotum opaque, closely punctured; scutellum and metanotum shining, impunctate, with a bluish tinge. Prothorax short, broadly rounded. Pleuræ shining. Median segment short, with a rather obliquely rounded slope from the base to the apex, and bearing a broad shallow (at the base scarcely visible) furrow down the centre. The greyish pubescence on the pro- and mesonotum is dense and moderately long, that on the pleuræ, scutellum, and metanotum sparser; the median segment bears a short pale pile, and towards the apex long greyish hairs. Abdomen shining, almost bare at the base; the apical segments rather densely covered with pale hair, the first four with an obscure (discoloured?) yellow mark at the sides. Pygidial area densely covered with stiff, dull rufous, pubescence. Wings: the second cubital cellule small, the first transverse cubital nervure being longer than the second, and with an oblique slope; the second cubital nervure is not very oblique and roundly curved—at the top it is about one fourth less in length than the third at the top, at the bottom it is about the length bounded by the second recurrent and second transverse cubital nervures; the first recurrent nervure is received a little beyond the middle of the cellule, the second beyond the basal third. The wings have a fuscous tinge; and there is a small cloud in and below the apex of the second cubital cellule; the apex has also a narrow cloud. The first spot on the abdomen is small and round, the second is the largest and longest, the other spots being smaller. Legs pruinose; the tarsi very long; the long spur of the hind tibiæ not reaching to the middle of the metatarsus.

18. **Salius teapensis.**

Niger, argenteo-pilosus; alis clare hyalinis, late brunneo-bifasciatis. ♀.
Long. 11 millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Head short, broader than the thorax; from below the ocelli white, with a silvery pile; the vertex with the pile sparser, not obscuring the colour, and bearing a few longish hairs. Eyes curved, distinctly converging at the top, hardly so beneath; the ocelli forming a triangle, the hinder ones separated from each other by about the same distance they are from the eyes. Clypeus gaping, the apex transverse. The head is alutaceous; the base of the mandibles finely rugose. Thorax alutaceous, more or less white with the silvery pile. Prothorax shorter than the head, the sides rounded, bluntly arcuate behind. Scutellum broad, not narrowed towards the apex, convex.

Median segment short, rather sharply rounded towards the apex. Abdomen almost shorter than the thorax and as broad as it; the sides of the segments with a silvery pile; the apical segment opaque, alutaceous, covered with long brownish hairs; the apex rounded, pale. Legs densely silvery-pruinose; the hind tibiæ and tarsi thickly and sharply spined; the long spur of the hind tibiæ reaches a little beyond the middle of the metatarsus; the claws with one stout straight tooth. Wings: radial cellule elongate, sharply lanceolate from the second transverse cubital nervure; the second cubital cellule at the top a very little, at the bottom considerably, shorter than the third; the first transverse cubital nervure oblique, slightly elbowed at the bottom, the second a little curved, the third still more curved; the first recurrent nervure is received beyond, the second in front of, the middle of the cellule; the first cloud extends along either side of the basal nervure and is as wide as the tops of the second and third cubital cellules united, the second extends from the first to the third transverse cubital nervures.

19. **Salius nivalis.** (Tab. XI. figg. 2, head: 2 *a*, wing.)

Cæruleus; alis fusco-violaceis. ♀.
Long. 14 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Head almost opaque, very finely punctured, and bearing a few longish black hairs. Eyes with a curve at the top, somewhat converging beneath. Ocelli almost forming a triangle, the hinder ones separated from the eyes by about twice the distance they are from each other; an obscure furrow runs down from them. Clypeus with the sides obliquely truncated, the truncated lateral parts being nearly as long as the apical part, which is bluntly rounded. Occiput almost transverse, the sides rounded. Prothorax as long as the head, the base forming a distinct neck, the sides rounded, the apex bluntly arcuate. Thorax with the pro- and mesonotum somewhat shining, and punctured like the head; the rest of the thorax opaque, alutaceous, and almost black. Median segment with a rounded slope, obscurely transversely striolated. Abdomen petiolate, very smooth and shining, almost shorter than the thorax, the apex sharply pointed; the pygidium covered with longish black, at the apex with fuscous, hair. Antennæ moderately long, filiform, black. Legs black, rather long; the tibiæ with a double row of short thin spines, not serrate, the long spur of the hind pair not reaching to the middle of the metatarsus; the claw with a short spine near the base. For wings, see Tab. XI. fig. 2 *a*.

20. **Salius impiger.**

Pompilus impiger, Cresson, Proc. Bost. Nat. Hist. Soc. xii. p. 371 [1].

Hab. Mexico, Orizaba (*Sumichrast* [1]).

ii. *The claws with two teeth; the first recurrent nervure received in the second transverse cubital nervure.* (Mygnimia.)

21. **Salius mexicanus.** (Tab. XI. fig. 3, wing.)

Mygnimia mexicana, Cresson, Trans. Am. Ent. Soc. i. p. 143[1]; Proc. Bost. Soc. Nat. Hist. xii. p. 379[2].

Hab. Mexico, Amula in Guerrero 6000 feet, Cuernavaca in Morelos (*H. H. Smith*), Vera Cruz (*Sartorius*[1 2]), Atoyac (*Schumann*), Orizaba (*Sumichrast*[2]); Guatemala, Purula in Vera Paz, Zapote (*Champion*); Panama, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

A species very variable in size (13–32 millim.). The antennæ sometimes have the tips blackish; and the relative lengths of the second and third cubital cells vary.

22. **Salius rogersi.** (Tab. XI. fig. 4, ♂ organ.)

Long. 30–32 millim.

Hab. Costa Rica, Volcan de Irazu 6000 to 7000 feet (*Rogers*).

Similar in coloration to *S. mexicanus*, having the body deep velvety-black; the antennæ fulvous, black at the base; and the wings bright ferruginous, violaceous at the base and apex. Longer; the labrum and clypeus roundly incised at the apex; the body much more thickly covered with long black hair; the hinder ocelli separated from the eyes by almost double the distance they are from each other (in *S. mexicanus* by about the same distance); the median segment more strongly transversely striated and more distinctly channelled down the centre; the pygidium not so thickly nor so strongly haired.

The male is similarly coloured; but it has the base of the wings more largely violaceous, the body more thickly haired, and the antennæ stout, the joints not dilated. The male of *S. mexicanus* is described as having the "face, clypeus, antennæ, except at the base above, and posterior margin of the prothorax and anterior legs, except at the base, yellow."

In the female the apical two joints of the antennæ are black. As in *S. mexicanus*, there is a subhyaline space with a macula in its centre at the base of the discoidal cellule.

23. **Salius dolichocerus.** (Tab. XI. figg. 5, wing; 5 *a*, ♂ organ.)

Long. 23–27 millim.

Hab. Guatemala, Paso Antonio (*Champion*); Panama, Volcan de Chiriqui 4000 feet (*Champion*).

This also has the *S. mexicanus* type of coloration, except that the five apical joints

of the antennæ are dark fuscous; but it may be at once distinguished from that species, and from *S. rogersi*, by the long and slender (not curled) antennæ, the more slender body, the eyes converging more at the top, and the absence of the clear space in the discoidal cellule. The apex of the labrum and clypeus is shallowly sinuate; the hinder ocelli are separated from the eyes by twice the distance they are from each other; the median segment is indistinctly striated; the body is deep velvety-black; the head and thorax are pilose; the hairs on the pygidium towards the apex are dull fulvous.

The male is similarly coloured to the female, and it has the antennæ equally long and slender. The genital organs are very different from those of *S. rogersi*, as will be seen by reference to the figures.

24. **Salius ustulatus.**

Hemipepsis ustulata, Dahlb. Hymen. Europ. i. p. 123 [1].
Mygnimia ustulata, Smith, Cat. Hymen. iii. p. 189 [2]; Cresson, Trans. Am. Ent. Soc. i. p. 143 [3].
Priocnemis ustulatus, Tasch. Zeitschr. f. ges. Naturw. xxxiv. p. 38 (1869) [4].

Hab. Mexico [1 2 3].

This species has the antennæ black.

25. **Salius morelosensis.** (Tab. XI. fig. 6, ♂ organ.)

Long. 30 millim.

Hab. Mexico, Cuernavaca in Morelos (*H. H. Smith*).

Black, velvety; the head and thorax densely pilose; the wings reddish-fulvous, black at the base and apex. Eyes slightly converging beneath, hardly at all above; the ocelli in a curve, the hinder ones separated from the eyes by a somewhat greater distance than they are from each other. Antennæ stout, the apical joints a little dilated. Median segment transverse at the apex, slightly transverse-striated. Alar neuration as in *S. mexicanus*. The long spur on the hind tibiæ reaches to the middle of the metatarsus.

This can hardly be the *S. ustulatus* of Dahlbom or Taschenberg.

26. **Salius panamensis.**

Mygnimia panamensis, Cresson, Trans. Am. Ent. Soc. i. p. 150 [1].

Hab. Panama [1].

27. **Salius veræpacis.** (Tab. XI. fig. 7, wing.)

Niger, flagello antennarum fulvo; alis fusco-violaceis. ♀.
Long. 22 millim.

Hab. Guatemala, Purula in Vera Paz (*Champion*).

Deep black; the head and thorax opaque, velvety; the abdomen shining, the apical segments slightly pruinose; pygidium rough, thickly covered with long black hairs. Clypeus slightly incised in the middle. Head and thorax bearing long black hair; coxæ and femora sparsely covered with long hair.

S. panamensis agrees with *S. veræpacis* in having fuliginous wings; but it is dark metallic green, the apical half of the antennæ only is fulvous, the wings are white at the apex, and the first recurrent nervure is not interstitial.

POMPILUS.

Pompilus, Fabricius, Ent. Syst., Suppl. p. 246 (1798); Kohl, Verh. zool.-bot. Ges. Wien, xxxiv. p. 51.

I agree with Kohl in treating *Planiceps*, *Ferreola*, &c. as mere sections of *Pompilus*.

Head flat, the antennæ short and inserted immediately over the clypeus, the thorax elongated, the fore tibiæ dilated and flattened, the fore wings with only two cubital cellules.—PLANICEPS, Latr. (Species 1–3.)

1. Pompilus (Planiceps) pulchritarsis.

Niger vel cæruleus; alis fuliginosis.
Long. 16 millim.

Hab. MEXICO, Chilpancingo in Guerrero 4600 feet (*Champion*).

Head opaque, shagreened, sparsely covered with black hairs; the cheeks with a whitish pubescence; eyes converging beneath; the ocelli almost in a triangle, the hinder ones separated from each other by, if anything, a greater distance than they are from the eyes; clypeus rounded at the apex. Thorax opaque, alutaceous; the pleuræ more shining; the pronotum quadrate, more than twice longer than the head. The scutellum is distinctly narrowed from the base to the apex. The median segment is as long as the mesothorax; the apex rounded above and with an oblique slope. Abdomen shorter than the thorax, the apex with longish hairs; the pygidium smooth. The first recurrent nervure is received a little beyond the middle of the cellule, the second beyond the second transverse cubital nervure; the first transverse cubital nervure curved, the second straighter and semi-oblique. Legs longish; the fore tibiæ thickened and dilated; the fore tarsi slightly incised at the base, ciliated, without comb-spines; the tibiæ sparsely spined; the tarsi thickly covered with short spines; the long spur of the hind tibiæ does not reach the middle of the metatarsus.

We have also received a *Pompilus* from North Yucatan (*Gaumer*), 9 millim. in length, which only differs from the type of *P. pulchritarsis*, so far as I can make out, apart from size, in having the fore tibiæ more rounded and not so much flattened.

2. Pompilus (Planiceps) concolor.

Planiceps concolor, Smith, Journ. Ent. i. p. 80 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 137 [2].

Hab. Mexico [1].

This species can hardly be synonymous with *P. pulchritarsis*: it is only 5 lines in length; is deep blue, with brilliant reflections; the abdomen is iridescent; the posterior wings are pale fusco-hyaline; the anterior tarsi are rufo-testaceous.

3. Pompilus (Planiceps) notabilis.

Planiceps notabilis, Smith, Journ. Ent. i. p. 80 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 137 [2].

Hab. Mexico [1].

We have received a specimen from Vera Cruz (*H. H. Smith*) apparently belonging to this species. It has the clypeus broadly rounded at the apex, the eyes converging beneath, the hinder ocelli separated from each other by a somewhat greater distance than they are from the eyes, the first recurrent nervure received in the middle of the cellule, the second a little beyond the middle of the second transverse cubital nervure.

The following six species agree with the foregoing in having an elongated prothorax and somewhat flattened head; but they have not the fore tibiæ flattened and dilated, and have three cubital cellules. (Species 4–9.)

4. Pompilus telemon.

Cæruleus; alis fuliginosis.
Long. fere 18 millim.

Hab. Guatemala, San Gerónimo (*Champion*).

Blue, with purplish tints. Head semi-opaque, more shining over the antennæ, velvety, sparsely covered with longish black hairs; the eyes slightly converging beneath; the hinder ocelli separated from the eyes by a greater distance than they are from each other; a broad shallow channel runs from them to the eyes; apex of the clypeus transverse. Antennæ black, short, stout; the third joint longer than the fourth. Prothorax fully one half longer than the head, rounded and narrowed in front, slightly rounded at the apex inwardly. Scutellum much narrowed towards the apex. Median segment at the apex oblique and sharply truncated; in the middle transversely and coarsely striated; concave at the apex. Abdomen as long as the thorax and narrower than it, compressed; the pygidium bearing longish black hairs. The first and third transverse cubital nervures curved, somewhat roundly elbowed, the second straight; the second cubital cellule at the top and bottom a little longer than the third; the first recurrent nervure received nearly in the middle of the cellule, the second distinctly

before the middle; the basal nervure and the anal nervure in the hind wings interstitial. Legs stout, of medium length; the tibial and tarsal spines stout; the long spur of the hind tibiæ not reaching the middle of the metatarsus, thin, sharply pointed.

5. **Pompilus eubule.** (Tab. XI. figg. 8, head; 8 *a*, wing.)

Long. 15 millim.

Hab. Mexico, Ventanas in Durango 2000 feet (*Forrer*), Amula in Guerrero 6000 feet (*H. H. Smith*).

Identical as regards form, coloration, and sculpture with *P. telemon*, but easily known from it by the apex of the clypeus being rounded, not transverse; the thorax covered with long black hairs; the prothorax at the base broader and without a neck; the median furrow wider and quite distinct; the abdomen shorter and broader; the long spur of the hind tibiæ shorter, the basal part dilated and bearing a brush of thick hairs; the second cubital cellule in proportion longer than the third, and receiving the recurrent nervure very obliquely beyond the middle.

6. **Pompilus macronotum.**

Pompilus macronotum, Kohl, Verh. zool.-bot. Ges. Wien, xxxvi. p. 336 [1].

Hab. Mexico, Cuernavaca (*Bilimek* [1]).

P. macronotum may be known from the preceding two species by the eyes not converging above, thus making the distance separating the eyes from the hinder ocelli much greater than these are from each other; by the front being finely punctured, and by the long spur of the hinder tibiæ reaching to the middle of the metatarsus.

7. **Pompilus impudicus.**

Niger, argenteo-pilosus; capite, pronoto mesonotoque antice rufo-hirtis; alis fumatis, lacteo fasciatis.

Long. 12 millim. ♀.

Hab. Panama, Peña Blanca 3000 to 4000 feet (*Champion*).

Head short, convex in front, concave behind, densely covered with a reddish-golden pubescence to near the antennæ; the cheeks, face, and clypeus shining, sparsely covered with a whitish pubescence; eyes converging beneath; the ocelli in a small triangle, the hinder ones separated from each other by a less distance than they are from the eyes; clypeus projecting, the sides oblique, the apex transverse. Pronotum quadrate, longer than the mesothorax. Scutellum convex, narrowed towards the apex; its base golden-pubescent. The base of the median segment with a broad dense band of whitish pubescence; the apex sharply oblique. Pleuræ pruinose, plumbeous. Abdomen shorter than the thorax, shining; a broad band of white pubescence on the apex of the first segment; the apex of the third segment with a broad white band

narrowed in the centre; the fourth segment with a narrow white band at the apex; the pygidium densely covered with a white pubescence. Legs pruinose, plumbeous; the spurs short, thick; the long spur of the hind tibiæ does not reach the middle of the metatarsus. The antennæ shorter than the thorax; the third joint a little longer than the fourth. Wings dark fuscous, a greyish cloud before the basal nervure, and a larger one at the radial cellule, the apex also being lighter; basal nervure interstitial.

8. **Pompilus pictus.**

Pompilus pictus, Kohl, Verh. zool.-bot. Ges. Wien, xxxvi. p. 338, t. 10. fig. 10, t. 11. fig. 13[1].

Hab. MEXICO, Cuernavaca (*Bilimek* [1]).

9. **Pompilus bugabensis.**

Niger, argenteo-pilosus, pronoto aureo hirto, abdomine albo plagiato; alis lacteis, fusco bifasciatis.
Long. 12–14 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Head short, broad, behind almost transverse, shining, finely punctured; a thick band of golden pubescence behind the ocelli; the cheeks, face, and clypeus with silvery pubescence; the eyes curved above, a little converging below; the ocelli in a large triangle, the hinder ones separated from each other by a distinctly greater distance than they are from the eyes; clypeus projecting, sharply narrowed from the base, the apex almost transverse. Antennæ shorter than the thorax; the third and fourth joints subequal. Pronotum quadrate, fully one half longer than the head, densely covered with golden pubescence. Mesonotum opaque, finely rugose in front; the pleuræ densely covered with silvery pubescence, except below the tegulæ; the scutellum convex, slightly narrowed towards the apex. The median segment densely covered with silvery pubescence, the apical half oblique. Abdomen longer than the head and thorax united, the apex acuminate, shining, laterally pruinose; the pygidium not clearly defined, covered with a whitish pubescence. Legs densely pruinose, shortish, the spines short and thick; the long spur of the hind tibiæ not reaching to the middle of the metatarsus. Wings short; the second cubital cellule quadrate, longer than the third, which converges at the top, and receives the recurrent nervure shortly before the middle; the first recurrent nervure also received before the middle; the basal nervure interstitial; the anal nervure in hind wings received before the cubital nervure.

To this section probably belong :—

10. **Pompilus variegatus.**

Ferreola variegata, Smith, Journ. Ent. i. p. 398 [1].

Hab. MEXICO [1] (*Mus. Brit.*).

11. **Pompilus formosus.**

Ferreola formosa, Smith, Journ. Ent. i. p. 399 [1].

Hab. Mexico [1], Oaxaca (*Mus. Brit.*).

This is closely related to *P. bugabensis*.

12. **Pompilus aztecus.**

Ferreola azteca, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 376 [1].

Hab. Mexico, Vera Cruz (*Sartorius* [1]).

13. **Pompilus lævifrons.**

Ferreola lævifrons, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 376 [1].

Hab. Mexico, Orizaba (*Sumichrast* [1]).

This species is probably synonymous with either *P. telemon* or *P. eubule*; I cannot make it out from the description.

I here place six species, which only agree in having two cubital cellules; they differ from *Planiceps* in not having the head flattened, nor the anterior tibiæ dilated. *P. smithianus* is a typical *Aporus* and has the prothorax quadrato-elongate.

14. **Pompilus tæniatus.**

Pompilus tæniatus, Kohl, Verh. zool.-bot. Ges. Wien, xxxvi. p. 336 [1].

Hab. Mexico, Orizaba (*Bilimek* [1]).

15. **Pompilus (Aporus) yucatanensis.**

Long. 7 millim.

Hab. Mexico, North Yucatan (*Gaumer*).

Black, covered with a sericeous pile, the abdominal segments banded with it. Head densely covered with a white sericeous pile; eyes slightly converging beneath; the hinder ocelli separated from each other by, if anything, a greater distance than they are from the eyes; the apex of the clypeus almost transverse. Antennæ stout, covered with a microscopic pile; the third joint longer than the fourth. Thorax shining, sparsely covered with a short pubescence. The prothorax as long as the head, not much narrowed towards the base; at the apex almost transverse. The median segment rather long; the apex oblique, at the sides projecting into stout teeth-like processes. Abdomen as long as the thorax, pruinose, sessile; the apex blunt, bearing some long black hairs; the apex of the penultimate ventral segment deeply incised. The anterior tarsi only ciliated beneath, and with a stout spine at the apices of the joints; the spurs

pale testaceous at the base; the tibiæ with a few long spines; the long spur of the hind tibiæ reaches nearly to the middle of the metatarsus. The fore wings with only two cubital cellules; the second cubital cellule receiving both the recurrent nervures, the first at a slightly greater distance from the base than the second is from the apex. The wings are short.

16. **Pompilus (Aporus) decorus.**

Long. 12 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Dark blue, pruinose. Head shagreened, above bearing long black hairs, the cheeks and clypeus with a silvery pubescence, transverse behind; eyes converging at the top; the hinder ocelli separated from each other by a greater distance than they are from the eyes; clypeus transverse at the apex; there is an indistinct furrow on the front. Thorax alutaceous, velvety; the prothorax broader than long, behind arcuate, and bearing some longish black hairs. Scutellum becoming gradually narrowed to the apex. The median segment with a gradually rounded slope to the apex, distinctly furrowed down the centre. Abdomen subsessile, a little longer than the head and thorax united; the pygidium and ventral surface with some long black hairs. Tibial spines long, pale; the long spur of the hind tibiæ reaches to the middle of the metatarsus. Wings dark fuscous, with lighter shades; the second cubital cellule large, the first recurrent nervure received near the basal third, the second beyond the apical fourth; both the transverse cubital nervures are curved, thus narrowing the second cubital cellule at the top; the basal nervure is interstitial; the anal nervure in hind wings is received beyond the cubital.

17. **Pompilus monticola.**

Long. 7 millim. ♂.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Black, pruinose, with bluish tinges. Head covered thickly with long pale fuscous hairs; antennæ short, thick, inserted free from the top of the clypeus, the third joint, if anything, shorter than the fourth; eyes distinctly converging beneath; the hinder ocelli separated from the eyes by about the same distance they are from each other; apex of the clypeus transverse. Prothorax shorter than the head, narrowed towards the base, the apex rounded. Median segment gradually rounded towards the apex, the extreme apex in the middle faintly hollowed. The entire thorax densely covered with longish silvery hair. Abdomen shorter than the thorax, closely covered with a silvery pile, sessile, compressed. Legs moderately long and stout, covered with a silvery pile; the base of the fore tarsus curved; the tibiæ almost without spines; the long spur of

the hind tibiæ reaching beyond the middle of the metatarsus. Fore wings with only two cubital cellules, the second a little narrowed at the top; both transverse cubital nervures curved; the first recurrent nervure received before the middle of the cellule, the second clearly beyond the second transverse cubital; the basal nervure interstitial; the anal nervure in hind wings received before the cubital. The wings are subhyaline, the apex smoky. The head is distinctly convex in front; behind almost transverse.

18. **Pompilus flavomarginatus.**

Niger, linea pronoti, calcaribus maculisque abdominis flavis; alis hyalinis, nervis pallidis.
Long. 7 millim. ♂.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Antennæ stout, densely covered with a stiff black pile; the third joint shorter than the fourth, the seventh and eighth deeply incised above (the other joints broken off). The face long, from the ocelli densely covered with long silvery pubescence; the eyes reaching to the base of the mandibles, curved, sharply converging at the bottom; the hinder ocelli separated from the eyes by about the same distance they are from each other; the vertex where the ocelli are is raised; the apex of the clypeus is rounded. Thorax covered with a silvery pubescence; the prothorax as long as the head, rounded in front, angled behind. Scutellum broad at the base, narrowed towards the apex. The median segment with a gradually rounded slope to the apex, finely punctured. Abdomen subpetiolate, compressed, the apex laterally oblique. Legs short, covered with a silvery pubescence; the fore tibiæ dilated towards the apex; the base of the fore metatarsus incised; the fore tarsi with a few short spines; the tibial spines short; the long spur of the hind tibiæ reaches nearly to the apex of the metatarsus. Wings pale fuscous, the nervures pale; the basal nervure not interstitial; there are only two cubital cellules, as in *Planiceps*; the second cubital cellule large, narrowed at the top; the first recurrent nervure received close to the middle of the cellule, the second beyond the second transverse cubital nervure; the anal nervure in the hind wings is interstitial. There is a broad pale yellow band on the edge of the pronotum, a broad one on the first and a smaller one on the second abdominal segment, and the spurs are white.

A very distinct species, remarkable for the deep incisions in the antennal joints, the close converging of the eyes beneath, and the raised vertex.

19. **Pompilus (Aporus) smithianus.** (Tab. XI. figg. 9, head; 9 *a*, wing.)

Niger, abdomine rufo; alis fumatis.
Long. 7 millim. ♀.

Hab. Mexico, Atoyac in Vera Cruz (*H. H. Smith*).

Head and thorax pruinose. Eyes but very slightly converging at the top; the

hinder ocelli separated from the eyes by a greater distance than they are from each other; apex of the clypeus truncate; the extreme apex of the clypeus and the greater part of the mandibles rufous. Pronotum longer than the head, quadrate, the sides straight, the apex transverse. Scutellum wider than long; the apex rounded. Median segment with the apex oblique, the top rounded, the centre excavated, densely covered with a silvery pubescence. Abdomen shorter than the head and thorax united, shining, subpetiolate, the apex sharply pointed. Legs comparatively short, covered with a silvery pile; the long spur of the hinder tibiæ does not reach the middle of the metatarsus; the tibiæ with some weak spines. The antennæ are as long as the thorax, stout; the third joint a little longer than the fourth. The fuscous wings have a lighter cloud running down from the base of the radial cellule, and another proceeds from the base of the second cubital cellule to the apex; the basal nervure is not interstitial; in the hind wings the anal nervure is received a long distance in front of the cubital.

The next species is easily recognized by the apex of the median segment being excavated and projecting laterally as stout teeth, and by the tibiæ being without spines, the smaller spur of the hind pair flattened and dilated.

20. **Pompilus sinaloæ.**

Long. 9 millim.

Hab. Mexico, Presidio de Mazatlan (*Forrer*).

Black, with a faint bluish tinge; wings violaceous. Eyes converging beneath; the hinder ocelli separated from each other by a greater distance than they are from the eyes; clypeus broadly rounded at the apex. Antennæ as long as the head and thorax united, covered with a microscopic pile; the third joint longer than the fourth. Prothorax as long as the head, arcuate at the apex. The median segment oblique and concave at the apex, the sides projecting above into blunt teeth; there is a depression at the base. Abdomen as long as the thorax; the apex bare. Legs long, stout; the tibiæ bare; the claws stout, sub-bifid; the hind tibial spurs short (about one-fourth the length of the metatarsus), stout, the shorter spur leaf-like; the anterior spurs longer and sharper.

Species 21–41 have black or bluish bodies, with fuscous, blackish, bluish, or violaceous wings. From the similarity of their coloration, and from many of the descriptions not making any mention of structural peculiarities, the species are not easily recognized or identified. Many of them vary from black to blue in colour.

The anal nervure in the hind wings not interstitial. (Species 21–23.)

21. **Pompilus montezuma.** (Tab. XI. fig. 10, wing.)

Long. 10 millim.

Hab. MEXICO, Chilpancingo 4600 feet, and Omilteme 8000 feet, both in Guerrero (*H. H. Smith*).

Dark blue, the males with a purplish tinge; wings violaceous; the head, thorax, and base of abdomen covered densely with longish black hair. Eyes a little converging above; the hinder ocelli separated from each other by about the same distance they are from the eyes; clypeus finely punctured round the apex, which is slightly incurved. Antennæ longer than the head and thorax united; the third joint distinctly longer than the fourth. Prothorax a little shorter than the head, quadrate, rounded in front, the apex bluntly arcuate. Median segment with the lower half obliquely truncate. Abdomen shorter than the head and thorax united, the apex with a few longish hairs; the pygidium rough. Legs stout; the tibial spines long; the long spur of the hind tibiæ not reaching much beyond the middle of the metatarsus; claws with a stout basal tooth. For neuration, see Tab. XI. fig. 10.

The male is more slenderly built. It has the antennæ longer than the head and thorax united, stout, tapering towards the apex, with the third joint longer than the fourth; the apex of the abdomen bare, the last segment deeply incised at the apex, the abdomen itself longer than the head and thorax united.

This species bears a great resemblance to *P. alticola*; but it may be easily separated by the interstitial basal nervure and by the apex of the pronotum not being angled.

22. **Pompilus mexicanus.**

Pompilus mexicanus, Taschenberg, Zeitschr. ges. Naturw. xxxiv. p. 52 (1869)[1].

Hab. MEXICO[1].

23. **Pompilus zapotecus.** (Tab. XI. fig. 11, wing.)

Long. 7 millim.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Dark blue, sparsely covered with a minute white pubescence; wings subhyaline, the apex from the end of the radial cellule smoky. Head broader than the thorax; eyes converging above; the hinder ocelli separated from the eyes by a greater distance than they are from each other; clypeus short, densely covered with a white pubescence, the sides oblique, the apex sinuate; there is a furrow above the antennæ. Antennæ stout, as long as the thorax, the third joint distinctly longer than the fourth. Prothorax shorter than the head, the apex bluntly angled. Median segment with a gradually rounded slope to the apex; the sides projecting into blunt teeth. Abdomen as long

as the thorax, the apex with a few longish hairs. Legs longish, stout; the tibial spines short; the long spur of the hind tibiæ reaching beyond the middle of the metatarsus; the claws with a short basal tooth. The basal nervure is not interstitial. For neuration, see Tab. XI. fig. 11. The neuration, especially as regards the form of the second cellule, is quite distinct. A well-marked species.

The anal nervure in hind wings interstitial; the basal nervure not interstitial.

(Species 24–41.)

24. **Pompilus pulchrinellus.** (Tab. XI. figg. 12, head; 12 *a*, wing.)

Long. 18 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

Head alutaceous, transverse behind, covered with long dark fuscous hairs; eyes diverging beneath; the hinder ocelli separated from each other by a less distance than they are from the eyes; clypeus transverse at the apex, more shining than the vertex, and bearing a few punctures. Thorax alutaceous, bearing long black hairs; the prothorax short, behind angular. Median segment with the apex having an oblique hollowed slope, and furrowed down the centre. Abdomen sessile, shorter than the head and thorax united; the pygidium and the ventral surface with some long black hairs. Legs longish; the tibial spines short and thick; the long spur of the hind tibiæ reaching to the middle of the metatarsus; the fore tarsi with long comb-spines, the tarsi beneath thickly spinose; the long spines at the apices of the joints and the claws testaceous; the claws simple, dilated at the base. For neuration, see Tab. XI. fig. 12 *a*.

25. **Pompilus alticola.** (Tab. XI. fig. 13, wing.)

Long. 12 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Black, sparsely pilose; wings short, fuliginous, with a slight purplish tinge. Eyes almost parallel; the ocelli hardly forming a triangle, the hinder ones separated from each other by a distinctly less distance than they are from the eyes; clypeus minutely punctured, the apex broadly rounded, the centre slightly incurved. Antennæ short, microscopically pilose; the third joint longer than the fourth. Prothorax shorter than the head; the apex bluntly angulated. Median segment gradually rounded to the apex; a broad shallow furrow down the centre. Abdomen shorter than the head and thorax united, subsessile; the apex above bearing thick bristle-like hairs, beneath the hairs are softer and more slender. Legs stout; the tibial spines short and thick; the long spur of the hinder tibiæ reaching a little beyond the middle of the metatarsus; the claws with a short basal tooth. For neuration, see Tab. XI. fig. 13. The basal nervure is not interstitial.

The male has the antennæ longer than the head and thorax united, microscopically

pilose, tapering a little towards the apex, and with the third joint rather longer than the fourth; the third ventral segment slightly pilose, the fourth and fifth densely covered with long black hairs; the apical segments with short hairs; and the fourth segment at the apex broadly incised.

The resemblance of this species to *P. interstitialis* is very close; but they may be separated by *P. interstitialis* having the third cubital cellule longer than the fourth (the reverse being the case in *P. alticola*), by the mass of bristle-like hair being absent (in *P. alticola* the apical segment bears long sparse hairs all over it), and by the long spur of the hind tibiæ being fully three-fourths the length of the metatarsus (in *P. alticola* it reaches just beyond the middle). In *P. interstitialis* the basal nervure may be said to be interstitial.

26. **Pompilus toluca.** (Tab. XI. figg. 14, head; 14 *a*, wing.)

Long. 13 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

In colour, sculpture, and size, and in having the basal nervure not interstitial, this species agrees with *P. alticola*; but it is a much stouter species, having a broader body, and has a different neuration (compare figures). It is, however, more particularly to be known from *P. alticola* by the long spur of the hind tibiæ not reaching the middle of the metatarsus, by the absence of the dense tufts of hair on the ventral surface of the abdomen, and by the penultimate ventral segment being deeply incised at the apex. Clypeus almost transverse at the apex; the hinder ocelli separated from each other by a less distance than they are from the eyes; front with an indistinct furrow. Prothorax as long as the head; the apex angulated. Median segment with a not very distinct furrow at the base. Abdomen as long as the head and thorax united; the apex above and beneath with long hairs.

27. **Pompilus interstitialis.** (Tab. XI. fig. 15, wing.)

Long. 12 millim.

Hab. Panama, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Head subopaque, indistinctly punctured, bearing long black hairs, behind transverse; the eyes a little converging beneath; the hinder ocelli separated from each other by a less distance than they are from the eyes; clypeus projecting, the apex broadly rounded, the apical portion finely punctured. Pronotum broader than long, angulated at the apex. Median segment with a gradually rounded slope to the apex, and bearing longish black hairs. Abdomen subsessile, shining; the pygidium and ventral surface bearing long black hairs. Legs long, of moderate stoutness; the long spur of the hind tibiæ reaching beyond the middle of the metatarsus; the tibiæ beneath moderately spinose. For neuration, see Tab. XI. fig. 15.

28. **Pompilus imperialis.** (Tab. XI. figg. 16, head; 16 *a*, wing.)

Pompilus imperialis, Smith, Descr. of New Species of Hymen. p. 155 (1879)[1].

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*); Costa Rica, Caché [1] (*Rogers*).

In this species the clypeus is broadly rounded; the eyes converge slightly at the top; and the ocelli are in a triangle, the hinder ones separated from each other by a slightly less distance than they are from the eyes. Head broader than the thorax, transverse behind; the prothorax as long as the head, a little narrowed in front, and having a distinctly rounded slope from the apex to the head, the apex slightly arcuate. Median segment with a gradually rounded slope to the apex, which is oblique; it has no furrow. Abdomen a little longer than the head and thorax united, not much compressed. The antennæ are short and thick; the scape covered with long hairs; the flagellum with a microscopic pile; the joints a little dilated beneath. The head and thorax bear a longish black pile. The tibiæ bear a few longish spines; the spurs of the hind pair are thick, and do not reach the middle of the metatarsus. The Mexican example is barely 9 millim in length.

29. **Pompilus championi.** (Tab. XI. figg. 17, head; 17 *a*, wing.)

Long. 13 millim.

Hab. Guatemala, near the city (*Champion*).

Of similar form, size, and colour (blue, with purple reflections) to *P. imperialis*; but it wants the velvety pubescence, the body being quite glabrous and shining. Eyes converging beneath; the ocelli hardly forming a triangle, the hinder ones separated from each other by about the same distance they are from the eyes; clypeus broadly rounded; the cheeks covered with long white pubescence. Head transverse or nearly so behind. Antennæ shorter than the thorax, tapering towards the apex, the joints a little dilated beneath; the third joint distinctly shorter than the fourth. Prothorax as long as the head, having a gradually rounded slope to the base; the base with a dense tuft of hair; the apex angulated. Median segment smooth, with a gradual slope to the apex, and without a furrow. Abdomen longer than the head and thorax united, smooth and shining. Legs of moderate stoutness; the tibiæ with short, thickish spines; the long spur of the hind tibiæ reaching beyond the middle of the metatarsus; claws simple, but thickened into a blunt tooth-like process at the base. For neuration, see Tab. XI. fig. 17 *a*: as will be seen from the figure, the transverse basal nervure is not interstitial.

The spurs are longer and thinner than they are in *P. imperialis*, and want the brush. *P. championi* differs also from that species in the apex of the prothorax being angulated.

30. **Pompilus omiltemensis.** (Tab. XI. figg. 18, head; 18 *a*, wing.)

Long. 9 millim.

Hab. Mexico, Omilteme in Guerrero 8000 feet (*H. H. Smith*); Panama, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Black, the whole body sparsely covered with long black hair; the median segment pruinose. Eyes curved; the ocelli large, in a triangle, the hinder ones separated from the eyes by a distinctly greater distance than they are from each other; clypeus projecting, broadly rounded, the middle part faintly incurved; frontal furrow distinct, especially over the antennæ. Antennæ slender, bearing a microscopic pile; the third joint distinctly longer than the fourth. Prothorax shorter than the head; the apex bluntly angulated. Median segment indistinctly furrowed down the centre and with a gradually rounded slope. Abdomen a little shorter than the head and thorax united, subsessile; the apex above and beneath with long hairs. Legs long, moderately slender; the tibial spines longish; the long spur of the hind tibiæ reaching a little beyond the middle of the metatarsus; claws with a sharp basal tooth.

The male has the head and thorax covered with long hair, as in the female; the apex of the clypeus incised in the centre; the antennæ longer than the head and thorax united, and densely covered with pile, their third and fourth joints subequal; the abdomen as long as the head and thorax united, and with a violet bloom; the last ventral segment raised and shining in the centre, this raised part being bordered by a deep furrow on either side.

31. **Pompilus philadelphicus.** (Tab. XI. figg. 19, head; 19 *a*, wing.)

Pompilus philadelphicus, Lep. de St.-Fargeau, Hist. Nat. des Ins. Hymén. iii. p. 423 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 87 [2].

Pompilus nebulosus, Smith, Cat. Hymen. Ins. iii. p. 160 (nec Dahlbom) [3].

Hab. North America [1 3], Delaware [2], Connecticut [2], Louisiana [2].—Mexico, Northern Sonora (*Morrison*), Presidio de Mazatlan (*Forrer*), Amula, Acapulco, and Xucumanatlan in Guerrero (*H. H. Smith*), Valladolid in Yucatan (*Gaumer*); Guatemala, Senahu, Purula, San Gerónimo in Vera Paz (*Champion*); Panama, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Numerous specimens of a *Pompilus* from the above-quoted Central-American localities probably belong to this species. In the British Museum there is also an example of it under this name from Mexico. The species varies in the colour of the body as regards having blue, greenish, or purplish reflections, and it likewise varies in size.

I give a fresh description from the specimens before me:—

Head alutaceous, sparsely haired, behind concave; the eyes slightly converging beneath; the hinder ocelli separated from the eyes by about the same distance that they are from each other; a furrow runs down to the antennæ; the clypeus is opaque,

alutaceous, the apex rounded broadly. Antennæ stout; the third joint very distinctly longer than the fourth. Pronotum broader than long, with a distinct neck at the head; behind arcuate. Median segment pruinose, with a gradual slope to the apex, indistinctly furrowed in the middle. Abdomen subsessile, not longer than the head and thorax together; the pygidium and ventral surface with long black hairs. Legs long, stout, the tibial spines moderate; the long spur of the hind tibiæ not reaching to the middle of the metatarsus; the tarsi beneath thickly spinose. For neuration, see Tab. XI. fig. 19 *a*.

32. **Pompilus unicolor.**

Pompilus unicolor, Smith, Descr. of New Species of Hymen. p. 154 (1879) [1].

Hab. GUATEMALA, Guatemala city 5000 feet (*Salvin* [1]).—ECUADOR, Guayaquil [1].

Appears to be very closely related to *P. philadelphicus*.

33. **Pompilus acapulcoensis.**

Long. 10 millim.

Hab. MEXICO, Acapulco in Guerrero (*H. H. Smith*).

Also related to *P. imperialis*, but though the body is velvety it is of a very dull blue; and differs from it further in having the antennæ longer, with the third and fourth joints subequal. Eyes converging beneath; the ocelli almost in a triangle, the hinder ones separated from each other by a much less distance than they are from the eyes; clypeus rounded at the apex, bluntly so in the middle. Antennæ longer than the thorax, slightly tapering towards the apex, the joints closely united, covered with a dense pile; the third and fourth joints subequal. Head rather densely covered with long blackish hairs, the cheeks more densely clothed with silvery hairs. Prothorax hardly so long as the head, arcuate at the apex. Median segment without a furrow. Abdomen as long as the head and thorax united. Legs stoutish; the tibial spines long; the long spur of the hind tibiæ reaching nearly to the apex of the metatarsus; claws apparently simple. The third cubital cellule triangular; the second recurrent nervure interstitial.

Apart from the difference in the neuration, *P. acapulcoensis* may be known from *P. championi* by the much longer hind tibial spurs (these in the latter not reaching much beyond the middle of the metatarsus), by the body being velvety, and by the antennæ being longer than the thorax.

34. **Pompilus leona.** (Tab. XI. fig. 20, wing.)

Long. 9 millim. ♂.

Hab. MEXICO, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Dark blue, faintly whitish-pruinose; the head and thorax with a few longish hairs.

Eyes converging a little above; the hinder ocelli separated from each other by nearly the same distance they are from the eyes; clypeus short, broadly rounded. Prothorax a little shorter than the head; the apex arcuate. Median segment with a gradually rounded slope; the sides projecting as blunt teeth. Abdomen shorter than the head and thorax together; the apical segment above thickly covered with long thick bristle-like hairs; the penultimate segment broadly incised. Legs stout; the tibial spines short; the long spur of the hind tibiæ reaching a little beyond the middle of the metatarsus. Second cubital cellule triangular, almost appendiculate. For neuration, see Tab. XI. fig. 20.

35. **Pompilus brevicornis.**

Pompilus brevicornis, Taschenberg, Zeitschr. ges. Naturw. xxxiv. p. 50 (1869) [1].

Hab. North America, Illinois [1].—Mexico [1].

36. **Pompilus anceps.**

Pompilus anceps, Smith, Trans. Ent. Soc. Lond. 3rd ser. i. p. 36 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 95 [2].

Hab. Panama [2] (*Stretch* [1]).

This species has the six apical joints of the antennæ orange-yellow.

37. **Pompilus æthiops.**

Pompilus æthiops, Cresson, Proc. Ent. Soc. Phil. iv. p. 451 [1]; Trans. Am. Ent. Soc. i. p. 87 [2]; Proc. Bost. Soc. Nat. Hist. xii. p. 367 [3].

Hab. North America, Colorado [1], United States [2 3]. — Mexico, Orizaba (*Sumichrast* [3]).

This species differs from any of the species I have described in having the anterior margin of the clypeus "very deeply emarginate in the middle and the sides broadly rounded."

38. **Pompilus lepidus.**

Pompilus lepidus, Say, Bost. Journ. Nat. Hist. i. p. 303 (1835) [1]; Complete Writings, ii. p. 745 [2]; Cresson, Trans. Am. Ent. Soc. i. p. 94 [3]; Proc. Bost. Soc. Nat. Hist. xii. p. 367 [4].

Hab. Mexico [1 2 3], Orizaba (*Sumichrast* [4]).

The male is said to have the fore claws cleft.

39. **Pompilus fulgidus.**

Pompilus fulgidus, Cresson, Proc. Ent. Soc. Phil. iv. p. 131 [1]; Trans. Am. Ent. Soc. i. p. 94 [2]; Proc. Bost. Soc. Nat. Hist. xii. p. 367 [3].

Hab. Mexico, Orizaba (*Sumichrast* [3]).—Antilles, Cuba [1 2].

40. **Pompilus simulans.**

Pompilus simulans, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 367 [1].

Hab. Mexico, Orizaba (*Sumichrast* [1]).

41. **Pompilus regalis.**

Pompilus regalis, Smith, Journ. Ent. i. p. 396 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 94 [2].

Hab. Mexico [1 2].

Species 42–46 have black bodies, very richly ornamented with a brilliant silvery pubescence; the wings violaceous, or yellowish, or hyaline banded with fuscous. In two of the species known to me (*P. gloriosus* and *P. veræpacis*) neither the basal nor the anal nervure is interstitial; the claws are almost bifid; the legs very long, with the long spur of the hind tibiæ short compared to the length of the metatarsus.

The basal and anal nervures not interstitial. (Species 42, 43.)

42. **Pompilus veræpacis.** (Tab. XI. figg. 21, head; 21 *a*, wing.)

Niger, læte argenteo-pilosus; alis violaceis.
Long. 18 millim. ♂ et ♀.

Hab. Guatemala, Cubilguitz in Vera Paz (*Champion*); Panama, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Deep black, bearing a brilliant silvery pile, especially thick on the face, pleuræ, and median segment, and on the third and fourth abdominal segments. Antennæ stout, convolute, longer than the head and thorax united; eyes very slightly converging at the top; the hinder ocelli separated from the eyes by hardly half the distance they are from each other; clypeus with the sides oblique, the apex projecting, slightly incurved. Prothorax shorter than the head, the apex bluntly rounded; in front of the tegulæ at the top there is a hollow. Scutellum raised, a little narrowed towards the apex. Median segment with a gradually rounded slope to the apex, without a central line, and covered with long soft pale hair. The sternum before the middle coxæ projects into a blunt tooth. Abdomen as long as the head and thorax united, subsessile; the pygidium rough and covered with stiff dull rufous pile and with some long black hairs; the four apical ventral segments bear long black hairs. Legs long; all the claws sub-bifid; the fore tarsi without spines, only shortly ciliated beneath; the tibial spines very short; the long spur of the hind tibiæ about one-fourth the length of the metatarsus. The third cubital cellule much longer than the second; the basal nervure not interstitial; the anal nervure in hind wings interstitial.

The male is similarly coloured to the female. It has the antennæ straight, moderately thick, tapering towards the apex, the apical joints curved and a little dilated,

the third joint longer than the fourth; the apex of the apical ventral segment with a smooth, shining, triangular depression.

43. **Pompilus gloriosus.**

Pompilus gloriosus, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 368 (1869) [1].

Hab. MEXICO, Orizaba (*Sumichrast* [1]); GUATEMALA, Chiacam in Vera Paz (*Champion*); PANAMA, Bugaba 800 to 1500 feet (*Champion*).

The male has the antennæ as long as the head, thorax, and half of the abdomen united, slender, curled at the tip, the third joint longer than the fourth; the eyes converging a little at the top; the hinder ocelli separated from the eyes by a greater distance than they are from each other; the clypeus rounded at the apex; the front, and also the hinder, claws bifid; the long spur of the hind tibiæ not reaching the middle of the metatarsus; the apex of the abdomen with some long black hairs.

The basal and anal nervures interstitial. (Species 44–46.)

44. **Pompilus confusaneus.**

Pompilus confusaneus, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 369 (1869) [1].

Hab. MEXICO, Orizaba (*Sumichrast* [1]).

45. **Pompilus connexus.**

Pompilus connexus, Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 369 (1869) [1].

Hab. MEXICO, Orizaba (*Sumichrast* [1]).

46. **Pompilus chiriquensis.** (Tab. XI. fig. 22, wing.)

Niger, læte argenteo-pilosus; alis flavis, fusco-bifasciatis. ♀.
Long. 29 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Head opaque, finely rugose, sparsely covered with an obscure rufous pubescence, slightly convex behind; eyes parallel; the ocelli closely set together, hardly forming a triangle, the hinder ones separated from each other by a less distance than they are from the eyes; vertex with an indistinct furrow; clypeus rounded and rufous at the apex, finely, rugosely punctured. Antennæ short, about as long as the head and thorax united. Thorax opaque, alutaceous, the pronotum and mesonotum with an obscure rufous pubescence; there is a thick patch of golden pubescence on either side of the scutellum, and there is a broad band of similar pubescence down the median segment; the pleuræ have silvery pubescence. Pronotum shorter than the head, the sides rounded; a furrow down the middle, the apex concave, but rather sharply pointed in the centre. Scutellum concave, not much narrowed towards the apex. Median

segment transversely furrowed, more strongly so towards the middle, the apex oblique. Abdomen longer than the head and thorax united, with patches of silvery pubescence along the sides and on the pygidium. Legs stout, longish, pruinose; the coxæ thickly covered with silky pubescence; the tibiæ thickly spined; the long spur of the hind tibiæ not half the length of the metatarsus. The basal nervure is almost interstitial; the anal nervure in hind wings is received in front of the cubital nervure.

Species 47 and 48 have deep black bodies and more or less reddish legs.

47. **Pompilus admirationis.**

Niger, coxis femoribusque posterioribus rufis; alis fusco-violaceis. ♀.
Long. 17 millim.

Hab. PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Head opaque, alutaceous, transverse behind; the eyes slightly diverging beneath; the ocelli in a triangle, the hinder ones separated from each other by a somewhat less distance than they are from the eyes; vertex with a narrow furrow; clypeus rounded at the sides, the apex almost transverse. Thorax opaque, alutaceous; the pronotum shorter than the head, bluntly angled. Scutellum concave, not narrowed towards the apex. Median segment with a gradual slope to the apex from the base, the basal half furrowed down the middle. Abdomen a little longer than the head and thorax united; smoother and more shining than the thorax; the apex bearing stiff black and rufous hairs; the pygidium rough. Legs very long; the tibial spines short, thick; the long spur of the hinder tibiæ one-third the length of the metatarsus; the claws sub-bifid; the fore tarsi without comb-spines. Wings longer than the body; the radial cellule long and narrow, acute at the base and apex; the second and third cubital cellules at top subequal; the first transverse cubital nervure is curved, the second straight, the third bluntly elbowed below; the first recurrent nervure is received near the apex of the cellule, the second near the apical fourth; the basal nervure is interstitial; the anal nervure in hind wings is received in front of the cubital nervure.

48. **Pompilus exactus.** (Tab. XI. figg. 23, head; 23 *a*, wing.)

Niger, linea pronoti flava, pedibus rufis; alis hyalinis, apice fumatis.
Long. 10–12 millim.

Hab. MEXICO, Presidio de Mazatlan (*Forrer*), Temax in North Yucatan (*Gaumer*).

Antennæ short, covered with a microscopic down, the third joint distinctly longer than the fourth. Face elongate; the eyes converging above; the hinder ocelli separated from each other by about the same distance they are from the eyes; the apex of the clypeus almost transverse; the labrum projecting. Prothorax about as long as the head; the apex rounded. The median segment gradually rounded to the

apex. Abdomen longer than the head and thorax united, sessile, the apex sharply pointed and bearing a few longish hairs. Legs of moderate length; the fore tarsi with long comb-spines, and ciliated beneath, the base incised; the tibial spines short; the long spur of the hind tibiæ reaching beyond the middle of the metatarsus; the claws with a basal tooth. The third cubital cellule is shorter above and beneath than the second and is narrowed at the top, through the cubital nervure being elbowed.

In the male the base of the femora is more or less black; the antennæ are about as long as the head and thorax united, thick, the flagellum fuscous beneath, the third joint shorter than the fourth; the abdomen is shorter than the head and thorax united, and has a white band on the apex of the third segment.

From Presidio de Mazatlan there is a small form (6 millim., ♂) with the inner and outer orbits pale yellow, and the four anterior legs and the hinder tarsi entirely black. There is a difference, too, in the shape of the third cubital cellule, which is more narrowed at the top; the third transverse cubital nervure being straight and not elbowed.

Species 49–53 have black bodies, with the abdomen entirely red, or red in the middle.

49. **Pompilus neotropicalis.**

Niger, abdomine, femoribus tibiisque posticis rufis; alis fuliginosis. ♀.
Long. 14 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Head almost opaque, alutaceous, from a little below the ocelli covered closely with a whitish-silvery pubescence, the vertex bearing long, sparse, blackish hairs; eyes distinctly converging and curved at the top; the ocelli in a curve, the hinder ones separated from each other by a somewhat greater distance than they are from the eyes; the sides of the clypeus rounded, the apex slightly incurved in the middle; a straight furrow leads down to the antennæ. Antennæ shorter than the body, pruinose: the third joint distinctly longer than the fourth. Pronotum subquadrate, gradually narrowed from the base to the apex, behind arcuate. Thorax opaque, alutaceous, pruinose; the scutellum concave, narrower and rounded towards the apex; the median segment rounded, thickly covered with a whitish pubescence intermixed with long white hairs. Abdomen as long as the head and thorax united, petiolate, pruinose; the pygidium shining, impunctate, bare. Legs elongate; the coxæ with a whitish-silvery pubescence; the spines sparse, long; the long spur of the hind tibiæ reaching beyond the middle of the metatarsus; the fore tarsi with thin comb-spines. At the top the second and third cubital cellules are subequal, at the bottom the second is longer than the third; the first transverse cubital nervure is received in the apical fourth, the second in the middle of the cellule.

50. **Pompilus boucardi.** (Tab. XI. figg. 24, head; 24 *a*, wing.)

Niger, linea pronoti, basi tibiarum et tarsorum posticis late flavo-albis, abdomine rufo; alis subhyalinis, apice fumatis.

Long. 12 millim.

Hab. Panama (*Boucard*).

The head and thorax densely covered with a silvery pile. The antennæ stout; the flagellum dull red; the third joint slightly longer than the fourth. The eyes converging beneath; the ocelli not in a triangle, the hinder ones separated from each other by a somewhat greater distance than they are from the eyes; the clypeus with the apex rounded and dull rufous. Prothorax longer than the head; the apex rounded. Scutellum narrowed towards the apex. The median segment gradually rounded. Abdomen as long as the head and thorax united, pruinose. Legs of moderate length; the spines few and short; the base of the fore tarsi curved; the long spur of the hind tibiæ hardly reaching to the middle of the metatarsus; the basal three-fourths of the hind tibiæ and the tarsal joints (except at the apex) are pale reddish-white. Wings subhyaline, the apex smoky. The basal nervure in the fore wings and the anal nervure in the hind wings are interstitial; the second cubital cellule is longer than the third; the second and third transverse cubital nervures almost unite at the top, the third becoming elbowed near the top.

Allied to *P. neotropicalis*; but it has the head and thorax much more densely pilose, the tibial spines less numerous, and the base of the fore metatarsus incised. The coloration of the legs is also different, as well as the form of the cubital cellules.

51. **Pompilus coruscus.**

Pompilus coruscus, Smith, Cat. Hymen. Ins. iii. p. 156 (1855) [1]; Cresson, Proc. Ent. Soc. Phil. iv. p. 128 [2]; Trans. Am. Ent. Soc. i. p. 103 [3]; Proc. Bost. Soc. Nat. Hist. xii. p. 370 [4].

Pompilus juxtus, Cresson, Proc. Ent. Soc. Phil. iv. p. 128 [5].

Pompilus coruscus, var. *juxta*, Cresson, Trans. Am. Ent. Soc. i. p. 103 [6].

Pompilus coruscus, var. *insignis*, Cresson, loc. cit. [7]

Hab. Mexico, Ventanas in Durango 2000 feet (*Forrer*), Orizaba (*Sumichrast* [4]), Atoyac in Vera Cruz (*H. H. Smith*); Guatemala, near the city (*Champion*); Panama, Bugaba (*Champion*).—Antilles, Cuba [2 3 5 6 7], San Domingo [1].

This species varies considerably in size. The eyes distinctly converge at the top; the hinder ocelli are separated from each other by a greater distance than they are from the eyes. The clypeus is short, broadly rounded at the apex; there is a furrow down the front. The prothorax is as long as the head and is bluntly angled at the apex; there is a small hollow in front of the tegulæ at the sides, and the base is raised. The median segment is broadly rounded to the apex. The abdomen is as long as the head and thorax united; the pygidium is rough and bears long black

hairs. The basal nervure is interstitial, the anal nervure in the hind wings hardly so, being received just in front of the cubital. Legs shortish, stout; the fore tarsi only ciliated beneath; the tibial spines longish; the long spur of the hind tibiæ reaches to the middle of the metatarsus.

The amount of black on the abdomen varies and the wings vary also in tint, some examples having the wings quite light at the base. The shape of the third cubital cellule varies: it may be petiolate, subpetiolate, or triangular.

52. **Pompilus apiculatus.** (Tab. XI. fig. 25, wing.)

Pompilus apiculatus, Smith, Cat. Hymen. Ins. iii. p. 157 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 103 [2].

Pompilus coruscus, Smith, Descr. of New Species of Hymen. p. 155 (1879) [3].

Hab. MEXICO, Presidio de Mazatlan (*Forrer*), Vera Cruz [1]; GUATEMALA, San Gerónimo (*Champion*), Chinautla 4100 feet (*Salvin* [3]).

Head semiopaque, covered with a whitish pubescence, alutaceous; eyes curved and converging at the top, at the bottom almost parallel; the ocelli in a triangle, the hinder ones separated from each other by about the same distance they are from the eyes; clypeus short, broad, the sides rounded, the apex almost transverse. Antennæ as long as the thorax, the third joint distinctly longer than the fourth. Thorax opaque; a line along the apex of the pronotum and the sides of the median segment densely covered with a silky pubescence. Pronotum subquadrate, not much narrowed towards the head. Scutellum concave, not narrowed towards the apex, longer than broad. The median segment depressed in the centre, the depression with a furrow in the middle. Abdomen shorter than the head and thorax, shining, slightly pruinose; the pygidium semiopaque, shagreened towards the apex. Legs stout, of moderate length, densely pruinose, the anterior pair having a plumbeous tinge; the spurs short, thick; the long spur of the hinder tibiæ reaching beyond the middle of the metatarsus. Wings short; the second cubital cellule longer than the third; the first transverse cubital cellule elbowed in the middle, the second straight, the third curving round so as to join the second; the first recurrent nervure is received in the apical third, the second beyond the middle of the cellule. The apex of the abdomen may be blackish.

Smith [3] described this species as *P. coruscus*, though he had long previously used the same name for another species of *Pompilus*.

53. **Pompilus subargenteus.** (Tab. XI. figg. 26, head; 26 *a*, wing.)

Pompilus subargenteus, Cresson, Proc. Ent. Soc. Phil. iv. p. 129 [1]; Trans. Am. Ent. Soc. i. p. 103 [2].

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith*).—ANTILLES, Cuba [1 2].

The Atoyac example (a male, 6 millim. in length) is, no doubt, referable to *P. subargenteus*. It has the eyes converging beneath; the hinder ocelli separated from each

other by about the same distance they are from the eyes; the apex of the clypeus truncate; the front bearing a distinct furrow; the apex of the pronotum sharply angled; the median segment gradually rounded to the apex; the apex of the penultimate ventral segment roundly incised; the base of the fore tarsi sharply incised and ciliated only; and the long spur of the hind tibiæ reaching quite close to the apex of the metatarsus.

Cresson describes [1] the wings as fuscous, darker at the tips. The Mexican example has them hyaline, with the tips smoky.

Here follow four slenderly built species, with black bodies variegated with white, the legs also having more or less white on them; the wings hyaline, smoky at the apex. (Species 54–57.)

54. **Pompilus guatemalensis.**

Niger, argenteo-pilosus, linea pronoti pedibusque posterioribus albo-annulatis, abdominis segmento 2° late rufo; alis hyalinis, apice late fumatis. ♂.

Long. fere 12 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Antennæ moderately stout, at the base closely united, the third and fourth joints subequal; eyes slightly converging at the top; the hinder ocelli separated from each other by a greater distance than they are from the eyes; the sides of the clypeus oblique, the apex almost transverse; there is a furrow on the front above the antennæ; the vertex bears some black hairs; from the ocelli the face and clypeus are covered with pale golden pubescence. Prothorax as long as the head, the apex angled. Scutellum narrowed towards the apex, which is rounded. Median segment with a rather gradually rounded slope to the apex, where there is a bright yellow elongate mark on either side. Abdomen longer than the head and thorax united, narrowed at the base, somewhat compressed; the apical ventral segments sparsely covered with longish black hairs; the penultimate ventral segment roundly incised. Legs longish, densely sericeous; the spurs, the bases of the middle tibiæ, the greater part of the hind tibiæ behind, and all the tarsal joints broadly at the base, white; the fore metatarsus incised at the base; the tibial spines numerous and minute; the long spur of the hind tibiæ reaching a little beyond the middle of the metatarsus. Wings subhyaline, with the apex smoky; the basal nervure interstitial; the anal nervure in the hind wings received beyond the cubital nervure; the second and third cubital cellules subequal.

55. **Pompilus dubitatus.**

Niger, flavo-maculatus, orbitis oculorum flavis, antennis subtus brunneis, geniculis, tibiis tarsisque anterioribus testaceis; alis hyalinis, apice fumatis. ♂.

Long. 8 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet, Atoyac in Vera Cruz (*H. H. Smith*).

Antennæ longish, stout, tapering towards the apex, the third and fourth joints subequal; all the joints dull rufous beneath (perhaps yellow, discoloured by cyanide of potassium). Eyes very slightly converging beneath; the hinder ocelli separated from each other by about the same distance they are from the eyes; the apex of the clypeus rounded; the inner orbits of the eyes and the sides of the clypeus broadly lemon-yellow; the cheeks and clypeus with silvery pubescence. Prothorax about as long as the head; the apex bluntly angled and broadly lemon-yellow. Scutellum not narrowed towards the apex, with a transverse mark at its base, and also one on either side, yellow; the postscutellum is also yellow, as well as the apex of the median segment broadly. Median segment with a gradual slope to the apex. On the pleuræ there is an irregular mark below the tegulæ, a smaller one below the hind wings, and a large one over the middle coxæ, yellow. Abdomen shorter than the head and thorax united, subsessile; the apical segment transverse, densely covered with silvery pubescence; the apex of the last ventral segment incurved; the base and apex of the basal segment, and the apices of the others, fulvous-yellow (perhaps lemon-yellow?). Legs longish, slender; the claws bifid; the long spur of the hind tibiæ reaching beyond the middle of the metatarsus; the hind coxæ behind, the apex of the fore femora, the four hinder femora beneath, the fore tibiæ entirely and the others at the base (the hinder pair very narrowly), the fore tarsi entirely, the base of the middle tarsi, and the spurs, yellow or fulvous. The basal nervure is interstitial; the anal nervure in the hind wings is received beyond the cubital nervure; the third cubital cellule is shorter than the second at the top and bottom, the third at the top about half the length it is at the bottom.

56. **Pompilus torolæ.**

Niger, linea pronoti, maculis duabus abdominis, basi tibiarum posticarum calcaribusque albis; alis fusco-fasciatis. ♂.

Long. 7 millim.

Hab. Guatemala, Torola 1000 feet (*Champion*).

Antennæ moderately stout, covered with a microscopic down, not tapering towards the apex, the apical joints dilated, the third joint distinctly longer than the fourth. Head, especially from below the ocelli, densely covered with a silvery pubescence; the eyes distinctly converging beneath; the ocelli in a triangle, the hinder ones separated from each other by a much less distance than they are from the eyes; the apex of the clypeus distinctly transverse. Prothorax shorter than the head; the apex angled rather acutely. The thorax, especially the pleuræ and the median segment, densely covered with silvery pubescence; the median segment with a very gradually rounded

slope and as long as the mesothorax. Abdomen subsessile, as long as the thorax; the apex acute, covered with long silvery hair. Legs very long and slender, densely covered with silvery pubescence; the front metatarsus incised at the base; the tibial spines few; the long spur of the hind tibiæ reaching to the middle of the metatarsus. Wings long; hyaline, with a cloud across the radial and the second and third cubital cellules; the basal nervure not interstitial; the second cubital cellule at the top and bottom shorter than the third and narrowed towards the top; the first recurrent nervure received beyond the middle, the second curved and received shortly before the middle; in the hind wings the anal nervure is received in front of the cubital nervure.

57. **Pompilus temaxensis.**

Niger, linea pronoti calcaribusque albis; alis hyalinis, apice fumatis. ♀.
Long. 6 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

Antennæ thick, the apical joints slightly dilated; the third and fourth joints subequal; the flagellum fuscous beneath. Eyes distinctly converging beneath; the hinder ocelli separated from the eyes by, if anything, a less distance than they are from each other; the face with a sparse whitish pubescence, shining, and with a bluish tinge; the inner orbits yellow. Prothorax as long as the head; the apex arcuate. Scutellum raised, hardly narrowed towards the apex. The median segment with a gradually rounded slope. Abdomen as long as the thorax; the apex with a silvery pile; the penultimate ventral segment not incised. Legs moderately long; the front claws bifid; the fore metatarsus curved at the base; the spines and spurs white; the hinder spurs thick, the longer one reaching beyond the middle of the metatarsus. The third cubital cellule is shorter at the top and bottom than the second, and at the top is half the length it is at the bottom; the anal nervure in the hind wings is interstitial.

Easily known from *P. torolæ* by the legs having the spines and spurs only white, by there being only one white band on the abdomen, by the third cubital cellule being shorter than the second, and by the interstitial anal nervure in the hind wings.

Species with the bodies yellowish or reddish. (Species 58–65.)

58. **Pompilus interruptus.**

Ceropales interrupta, Say, Bost. Journ. Nat. Hist. i. p. 365 [1]; Complete Writings, ii. p. 750 [2].
Pompilus interruptus, Cresson, Trans. Am. Ent. Soc. i. p. 104 [3]; Proc. Bost. Soc. Nat. Hist. xii. p. 370 [4].

Hab. NORTH AMERICA, United States [3], Indiana [1].—MEXICO, Orizaba (*Sumichrast* [4]).

This must be a close ally of *P. balteolus*, but it is, I believe, distinct: *e. g.* the apex

of the clypeus in *P. interruptus* is described as "truncated," while in *P. balteolus* it is rounded, with a slight but distinct incurvation; *P. interruptus*, moreover, is stated to have the third cubital cellule "subtriangular" and "large."

59. **Pompilus balteolus.**

Rufo-fulvus, flavo-maculatus; pleuris nigris, flavo-maculatis; pedibus flavis, coxis, femoribus apiceque tibiarum posticarum nigris; alis fumatis.
Long. 12–13 millim.

Hab. MEXICO, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*), North Yucatan (*Gaumer*).

Brownish-fulvous; the orbits of the eyes, a spot on either side of the base of the pronotum, the apex of the pronotum broadly, a broad line on either side of the scutellum, a thin line at its apex, the postscutellum, and the apical half of the median segment, bright yellow; the pleuræ, scutellum, and base of the median segment black; there is a yellow mark below the tegulæ and a larger one below this; there are two yellow marks on the base of the abdomen and the abdominal segments are yellow at the apex; the coxæ, trochanters, and femora (except at the extreme apex) are black; the apical third of the hind tibiæ is black; the apices of the tarsal joints are fuscous; the rest of the legs fulvous, mixed with yellow; the antennæ are fulvous, with the six apical joints black. Eyes distinctly converging at the top; the hinder ocelli separated from each other by a less distance than they are from the eyes; the clypeus short and broad, the sides rounded, the apex slightly incurved; the clypeus and cheeks with a pale pubescence. Prothorax as long as the head, the apex angled bluntly, the sides flat; there is an impressed line down the centre of the pronotum. Scutellum short and broad, not narrowed towards the apex. Median segment with a gradually rounded slope to the apex, which is margined, the margin projecting at the sides. Abdomen subsessile, hardly longer than the head and thorax united; the pygidium black and rough, and with some black hairs; the ventral surface may be black entirely or have bright yellow marks. Legs longish, stout, bearing a pale pubescence; anterior tarsi with long spines, beneath ciliated; the tibial spines and the spines on the hind tarsi longish; the long spur of the hind tibiæ about two-thirds of the length of the metatarsus; the hinder tarsi spinose beneath; all the claws with a basal tooth. Wings smoky-fuscous; the basal nervure interstitial; the third cubital cellule above and beneath shorter than the second, above much narrowed, the cubital nervures running almost parallel; in the hind wings the anal nervure is received beyond the cubital nervure.

In structure, it is difficult to find any characters to distinguish this insect from *P. flavopictus*; but as the coloration is quite uniform in the specimens from the localities cited, *P. balteolus* is doubtless a good and distinct species.

60. **Pompilus flavopictus.** (Tab. XI. figg. 27, head; 27 *a*, wing.)

Pompilus flavopictus, Smith, Journ. Ent. i. p. 396 [1]; Descr. of New Species of Hymen. p. 156 (1879) [2]; Cresson, Trans. Am. Ent. Soc. i. p. 97 [3]; Proc. Bost. Soc. Nat. Hist. xii. p. 370 [4].

Hab. Mexico [1 3], Orizaba (*Sumichrast* [4]), Xucumanatlan in Guerrero 7000 feet, Teapa in Tabasco (*H. H. Smith*), North Yucatan (*Gaumer*); Guatemala, Las Mercedes 3000 feet, Panima in Vera Paz (*Champion*); Nicaragua, Chontales (*Belt*); Costa Rica, Caché [2] (*Rogers*); Panama, Bugaba, Volcan de Chiriqui (*Champion*).

A common and, as regards the amount of black on the body, antennæ, and legs, variable species. The eyes distinctly converge at the top; the hinder ocelli are separated from each other by about the same distance they are from the eyes; the clypeus is very slightly incurved at the apex, the sides rounded. The prothorax is as long as the head, the apex rounded; the median segment with a gradually rounded slope to the apex. The abdomen is a little longer than the head and thorax united; the apex with some long hairs. The legs are longish; the spines long, slender, and numerous; the long spur of the hind tibiæ reaching beyond the middle of the metatarsus. The anal nervure in the hind wings is received beyond the cubital nervure; in the fore wings the basal nervure is interstitial.

The male has the apex of the clypeus transverse and the sides obliquely truncate.

Smith [2] describes this species as new under the same name he used previously [1], his original type being from Mexico.

61. **Pompilus pygidialis.**

Pompilus pygidialis, Kohl, Verh. zool.-bot. Ges. Wien, xxxvi. p. 334 [1].

Hab. Mexico, Cuernavaca (*Bilimek* [1]); Panama, Bugaba (*Champion*). — South America, Buenos Ayres [1]; Antilles, Cuba [1].

This species is remarkable for having the fore claws bifid, while the four others are only toothed. The eyes at the top, too, approach nearer than in any of the other species of the genus.

62. **Pompilus virulentus.**

Pompilus virulentus, Smith, Descr. of New Species of Hymen. p. 155 (1879) [1].

Hab. Mexico, Temax in North Yucatan (*Gaumer*); Costa Rica, Irazu 6000 to 7000 feet [1] (*Rogers*).

Eyes very slightly converging at the top, hardly reaching to the base of the mandibles; the hinder ocelli separated from each other by about the same distance they are from the eyes; the clypeus and cheeks with a white pubescence, the vertex with a few hairs; there is a short indistinct furrow on the front. The prothorax is as long as the head; an indistinct furrow on the pronotum and a large oblong hollow in

the sides; there is a black longitudinal furrow on the mesopleura. Median segment with a rounded slope to the apex, which has an oblique one; down the middle it is deeply furrowed, and at the sides at the base and apex there is a blunt tubercle. Apex of the abdomen with some longish hairs. The legs are long, especially the tarsi, which are twice the length of the tibiæ; the anterior tarsi with long curved spines and ciliated beneath, the hinder tarsi with short spines; the tibial spines short, stout; the long spur of the hinder tibiæ not reaching the middle of the metatarsus. The basal nervure is interstitial, as is also the anal nervure in the hind wings.

In both sexes the third antennal joint is longer than the fourth; in the male the apex of the clypeus is more transverse than it is in the female.

Apparently a common species in Yucatan.

63. **Pompilus marcidus.**

Pompilus marcidus, Smith, Journ. Ent. i. p. 395 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 110 [2].

Hab. Mexico, Orizaba (*Mus. Brit.*[1]).

A specimen from Bugaba may belong to this species; but Smith's description is too vague to enable me to speak with certainty, the description dealing only with colour. As regards colour, the only difference is that *P. marcidus* has the apex of the four hinder tarsi black and the femora red, while in the Bugaba specimen the hinder coxæ and femora are for the greater part black, and the tarsi without black. The Bugaba example agrees with *P. pygidialis* in having the fore claws cleft, and also in the form of the head, *i. e.* the eyes converge more than usual at the top. It is, however, evidently distinct, for it has the third cubital cellule at the top not much more than half the length of the bottom, it being also shorter than the second; the long tibial spur on the fore legs does not equal the metatarsus in length, it being distinctly shorter; the spur of the middle tibiæ is not much more than half, that of the hinder tibiæ not two-thirds, the length of the metatarsus. No mention either is made of *P. pygidialis* having the seven apical joints of the antennæ black, nor of any black colour on the hind legs. Undoubtedly, however, the two are very closely related. There are only three spines on the fore metatarsus; and the nervure in the hind wings is received beyond the cubital.

64. **Pompilus torridus.** (Tab. XI. figg. 28, head; 28 *a*, wing.)

Pompilus torridus, Smith, Journ. Ent. i. p. 396 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 110 [2]; Proc. Bost. Soc. Nat. Hist. xii. p. 371 [3].

Pompilus torridus, var. *burrus,* Cresson, Proc. Bost. Soc. Nat. Hist. xii. p. 371 [4].

Hab. Mexico [1 2], Orizaba (*Sumichrast* [3], *Sallé*), Vera Cruz (*Sartorius* [4]), Teapa in Tabasco (*H. H. Smith*), Temax in North Yucatan (*Gaumer*).

Eyes slightly converging beneath; the hinder ocelli separated from each other by

about the same distance they are from the eyes; clypeus with the sides oblique, the apex transverse. Prothorax as long as the head, the apex rounded; the median segment gradually rounded to the apex, which is oblique, with a large ∩-shaped hollow in the middle, this hollow being for the greater part black. Abdomen shorter than the head and thorax, the apex hardly pilose. The fore legs without spines; the long spur of the hind tibiæ reaching a little beyond the middle of the metatarsus.

Two specimens from Orizaba (*Sallé*), from which the above characters are taken, doubtless belong to this species.

An example from Temax has the mesonotum in front and the median segment above black, the hind tarsi also from the middle of the metatarsus being black. Another example from North Yucatan has the wings lacteous.

In the male the antennæ are stout, not tapering much towards the apex, the third and fourth joints subequal.

65. **Pompilus algidus.**

Pompilus algidus, Smith, Cat. Hymen. Ins. iii. p. 158 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 101 [2]; Proc. Bost. Soc. Nat. Hist. xii. p. 371 [3].

Hab. North America, W. Virginia and Georgia [2].—Mexico, Orizaba (*Sumichrast* [3]).

NOTOCYPHUS.

Notocyphus, Smith, Cat. Hymen. Ins. iii. p. 172 (1855); Kohl, Verh. zool.-bot. Ges. Wien, xxxiv. p. 50.

1. **Notocyphus plagiatus.**

Notocyphus plagiatus, Smith, Journ. Ent. i. p. 398 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 134 [2].

Hab. Mexico [2] (*Mus. Brit.*[1]).

2. **Notocyphus albopictus.**

Notocyphus albopictus, Smith, Journ. Ent. i. p. 398 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 134 [2].

Hab. Mexico [2] (*Mus. Brit.*[1]).

3. **Notocyphus apicalis.**

Niger, abdominis apice rufo; alis fuliginosis.
Long. fere 9 millim.

Hab. Panama, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Eyes very slightly converging beneath; the ocelli in a triangle, the hinder ones separated from each other by about the same distance they are from the eyes; apex of the clypeus almost transverse; a furrow, widest at the top, above the antennæ. Antennæ stout, involute, the third joint distinctly longer than the fourth. Prothorax

as long as the head, subquadrate, rounded in front at the sides; the apex bluntly angled; scutellum narrowed towards the apex; the median segment nearly as long as the mesothorax, flattish above, the apex rounded. Abdomen shorter than the thorax; sessile, the apex acute, shining, beneath sparsely haired. Legs elongate, stout, the base of the fore tarsi acutely incised; the tibiæ with a few minute spines; the long spur of the hind tibiæ not reaching the middle of the metatarsus; the claws stout, bifid; the tarsi sparsely spined. Head and thorax opaque, alutaceous, the abdomen shining.

Very distinct from the preceding species, *N. plagiatus* having blood-red colour on the thorax, and *N. albopictus* white.

4. **Notocyphus violaceipennis.** (Tab. XII. fig. 1.)

Niger; alis violaceis. ♀.
Long. 12 millim.

Hab. Mexico, Atoyac in Vera Cruz (*H. H. Smith*).

Head narrower than the thorax, transverse behind, very finely punctured, the front distinctly channelled; eyes very slightly converging beneath; the ocelli in a triangle, the hinder ones separated from the eyes by about the same distance they are from each other; the clypeus projecting, the apex rounded; the labrum longer than the clypeus, narrowed gradually towards the apex, which is rounded. Antennæ stout, longish; the third joint a little longer than the fourth. The prothorax somewhat shorter than the head, the apex arcuate, the base abrupt. The scutellum narrowed towards the apex. The median segment elongate, the top flat; the apex sharply oblique, broadly incised, acutely in the middle; the sides projecting into two stout teeth. Abdomen hardly so long as the head and thorax united, the apex, viewed laterally, oblique and bearing a few black hairs. Legs long; the tibiæ without spines; the tarsi ciliated beneath and with some short spines; the long spur of the hind tibiæ reaching to the middle of the metatarsus; the claws bifid. Wings shorter than the body; the third cubital cellule at the top somewhat shorter than the distance bounded by the second recurrent and the second transverse cubital nervures; the recurrent nervures are received in the middle of the cellules, the second sharply elbowed. The palpi are testaceous.

Similar to *N. apicalis*, but much larger, has the apex of the abdomen black, and otherwise easily known by the sharply incised apex of the median segment. *N. tyrannicus*, from Brazil, closely resembles *N. violaceipennis*; but it has the median segment differently formed, and the labrum truncated at the apex.

5. **Notocyphus chiriquensis.**

Niger, abdomine albo-maculato; alis fuliginosis. ♀.
Long. 15 millim.

Hab. Panama, Volcan de Chiriqui 3000 to 4000 feet (*Champion*).

Head opaque, shagreened, sparsely covered with black hairs, curved and rounded behind; the eyes almost parallel; the ocelli in a triangle, the hinder ones separated from each other by about the same distance they are from the eyes; the vertex depressed and furrowed in the centre; the clypeus with the sides straight, the apex transverse. Antennæ a little longer than the head and thorax united, the third joint slightly longer than the fourth. Thorax opaque, the pleuræ more shining; above bearing a short pubescence, which is thicker and longer on the median segment. Pronotum a little shorter than the head, rounded at the base and apex; scutellum narrowed towards the apex, it being there not half the width of the base; the median segment at the apex almost transverse. Abdomen subpetiolate; there is a large squarish yellow spot on either side of the second segment, and the fifth and sixth segments are yellow in the middle. Legs very long; the tibial spines numerous, short, thick, the tarsal spines somewhat longer and thinner; the coxæ, especially behind, covered with silvery pubescence; the long spur of the hind tibiæ not reaching the middle of the metatarsus. Radial cellule elongate; the second and third cubital cellules subequal above; the first and second transverse cubital nervures oblique, straight, the first being more sharply oblique than the second, the third elbowed; both the recurrent nervures are received shortly before the middle of the cellule.

6. **Notocyphus stimulator.**

Niger, antennis, linea pronoti, tegulis, geniculis, tibiis tarsisque anterioribus brunneo-testaceis; alis flavo-hyalinis. ♂.

Long. 16 millim.

Hab. Panama, Bugaba 800 to 1500 feet (*Champion*).

Antennæ stout, very slightly tapering towards the apex; the third and fourth joints subequal. Eyes almost parallel; the hinder ocelli separated from each other by a greater distance than they are from the eyes; the apex of the clypeus transverse; the apex of the labrum incised in the middle. Prothorax shorter than the head; the apex rounded. Median segment elongate, with a gradually rounded slope to the apex. Abdomen longer than the head and thorax united, subsessile. Legs long and slender; the tibial spines short; the fore claws (but not the hind) with the tooth well developed; the long spur of the hind tibiæ reaching to the middle of the metatarsus.

EPIPOMPILUS.

Epipompilus, Kohl, Verh. zool.-bot. Ges. Wien, xxxiv. p. 57 (1885).

1. **Epipompilus maximiliani.**

Epipompilus maximiliani, Kohl, Verh. zool.-bot. Ges. Wien, xxxiv. p. 57 [1], nota; xxxvi. p. 340 [2].

Hab. Mexico (*Bilimek* [2]).

CALICURGUS.

Calicurgus, Lepeletier de St.-Fargeau, Hist. Nat. des Ins. Hymén. iii. p. 397 (1845).

1. Calicurgus rhodogaster.

Calicurgus rhodogaster, Kohl, Verh. zool.-bot. Ges. Wien, xxxvi. p. 343 [1].

Hab. Mexico, Orizaba (*Bilimek* [1]).—South America, Brazil [1].

PEPSIS.

Pepsis, Fabricius, Syst. Piez. p. 207 (1804).

This genus contains the largest and most striking forms of Pompilidæ. The species from their similarity in structure, form, and colouring are not easily separated. In this latter respect we find two types—one with the wings fiery-red, the other with the wings violaceous ; and in both we have species with the antennæ orange, and species with the antennæ black. We have, in fact, the same types of coloration as in the larger *Salius* (*Hemipepsis*). The coloration of the wings is produced mainly by the presence of minute scales.

i. *Wings for the greater part fiery-red or fulvous.* (Species 1–11.)

a. *Antennæ with the flagellum yellowish.* (Species 1–7.)

1. Pepsis optima.

Pepsis optimus, Smith, Descr. of New Species of Hymen. p. 157 (1879) [1].

Hab. Costa Rica, Volcan de Irazu 6000 to 7000 feet [1], Rio Sucio [1] (*Rogers*) ; Panama, Bugaba 800 to 1500 feet (*Champion*), Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

The largest species of the section, and known from the others by the apex of the wings not being clouded. The labrum is closely punctured ; the scape of the antennæ bears a few black hairs ; the mesothorax is sparsely, the median segment very densely, covered with black hairs ; the median segment with a blunt tooth at the base and apex, not furrowed down the centre, and without a transverse ridge ; the mesopleuræ not tuberculate ; the abdomen has a decided bluish tinge, and has its apex densely covered with long black hairs above ; the head is well developed behind the eyes, but does not bulge out. If anything, the apex of the wings is clearer than the other portion.

2. Pepsis azteca.

Long. 34 millim.

Hab. Mexico, Atoyac in Vera Cruz (*Schumann*).

Very nearly related to *P. optima*, but smaller ; the black band at the base of the fore

and hind wings is much larger, and there is at the apex of both a blackish-violaceous border; the median segment is longer, more narrowed towards the apex, and is neither toothed at the base nor at the apex, the apex having a gradually rounded slope (in *P. optima* it is abrupt, almost oblique).

The clypeus is moderately convex, the curve at the apex very slight; the labrum punctured. The scape of the antennæ is dull purplish-pruinose and without hair; the base of the third joint is black. The head and thorax are velvety, moderately covered with long black hair; the median segment is densely pilose. The head and thorax have a much more distinct bluish tinge than they have in *P. optima*, as have also the legs and abdomen. The latter has the apex densely covered with long, black, bristle-like hairs above and beneath, and the other ventral segments have some long hairs. The legs are blue, the spines black. The third transverse cubital nervure is curved (not elbowed as in *P. optima*), the third cubital cellule being not much narrower at the top than at the bottom; the first recurrent nervure is received nearer the middle of the cellule than it is in *P. optima*.

3. **Pepsis guatemalensis.** (Tab. XII. fig. 2.)

Long. 24 millim. ♀.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Very similar to *P. azteca*, but much smaller and more slenderly built; the body of a more decided violaceous tint; the cloud at the base of the wings smaller and the one at the apex larger, it extending to the third transverse cubital nervure; the cubital cellule at the top only half of the width at the bottom; the third transverse cubital nervure curving more towards the second and thus narrowing the cellule; the median segment at the base and apex very distinctly toothed, and with the apical transverse ridge more distinct; the third antennal joint entirely black; and the apex of the clypeus much more distinctly incised. The head is not much narrowed behind the eyes and is very sparsely covered with black hairs; the mesonotum has few hairs, and the median segment hardly any, this being another point in which *P. guatemalensis* differs from *P. azteca*. The median segment is transversely striolate, and without a central furrow. The apex of the abdomen with long, black, bristle-like hair; the other segments sparsely haired. The legs have the spines short and black, the legs themselves being purplish-blue.

A male, also from San Gerónimo, apparently belongs to the same species. It agrees with the female in colour and clothing; but the wings are of a duller tint, and only the basal two joints of the antennæ are black, the incision in the apex of the clypeus is deeper, the median segment is not so strongly tuberculate, the third cubital cellule is wider at the top, the apex of the abdomen above is covered with black hair, and the ventral surface is sparsely pilose, without tufts.

4. **Pepsis antennalis.** (Tab. XII. fig. 3.)

Long. 22 millim. ♀.

Hab. Panama (*Boucard*).

Sericeous-blue; the first, second, third, and fourth joints of the antennæ black, the remaining joints orange-yellow. Head covered with long black hair; the frontal furrow wide and deep; the apex of the clypeus very slightly arcuate. The median segment strongly transversely striolate; the extreme apex sharply oblique and strongly carinate at the top; the apical keel not depressed in the middle; the sides and the mesopleuræ hardly tuberculated. The abdomen at the apex above and beneath bearing long black hairs. The legs pruinose, very stoutly spinose. The fore wings deep black at the extreme base, infuscated at the apex, but not deeply, for the rest dull-yellow; the hind wings entirely smoky-violaceous. The third cubital cellule elongate; the third transverse cubital nervure sharply elbowed, so that at the top the third cubital cellule is hardly half the length of the bottom; the second recurrent nervure sinuate and received considerably in front of the middle of the cellule.

5. **Pepsis cinctipennis.**

Pepsis cinctipennis, Mocsáry, Termes. Füzetek, ix. p. 265 (1885) [1].

Hab. Guatemala, Escuintla [1].

6. **Pepsis chiron.**

Pepsis chiron, Mocsáry, Termes. Füzetek, ix. p. 266 (1885) [1].

Hab. Honduras [1].

7. **Pepsis andrei.**

Pepsis andrei, Mocsáry, Termes. Füzetek, ix. p. 267 (1885) [1].

Hab. Guatemala [1].

b. *Antennæ entirely black.* (Species 8–11.)

8. **Pepsis montezuma.** (Tab. XII. fig. 6.)

Pepsis montezuma, Smith, Cat. Hymen. Ins. iii. p. 199 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 146 [2].

Hab. Mexico [1]; Guatemala, El Tumbador, Zapote, Purula (*Champion*); Nicaragua, Chontales (*Belt*); Costa Rica, Caché (*Rogers*); Panama, Volcan de Chiriqui 7000 to 8000 feet (*Champion*).—Colombia [1].

The apex of the clypeus is, for a *Pepsis*, rather deeply incised and bears some punctures; the labrum is finely rugose; the black cloud on the wings reaches to the basal nervure; the mesopleuræ are bluntly tuberculate; the apex of the abdomen above is densely covered with stiff longish hairs, beneath more sparsely with longer, softer hair.

9. **Pepsis sommeri.**

Pepsis sommeri, Dahlbom, Hymen. Eur. i. p. 465 [1]; Cresson, Trans. Am. Ent. Soc. i. p. 146 [2]; Proc. Bost. Soc. Nat. Hist. xii. p. 379 [3].

Hab. Mexico [1], Vera Cruz (*Sartorius* [2 3]); Guatemala [3].

I have no doubt that *P. montezuma* is a synonym of this. Among the large number of specimens in my possession, it is the only one with, as described by Cresson, the basal third of the fore wings and the basal half of the hind wings black. They agree also in size, and Cresson remarks [3] that *P. sommeri* is quite abundant in Guatemala.

Smith in his Catalogue Hymen. Ins. iii. omits *P. sommeri* entirely.

10. **Pepsis occidentalis.** (Tab. XII. fig. 5.)

Long. 17 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*); Guatemala, Purula and Senahu in Vera Paz, Cerro Zunil 4000 to 5000 feet (*Champion*); Panama, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Brilliant sericeous-blue; the antennæ black; the wings fuscous-black to the basal nervure, the apex the same colour from the second recurrent and the third transverse cubital nervures. The antennæ nearly as long as the body, covered with a dull microscopic pile; the basal joints very closely amalgamated; the apical joints dilated on the lower side. The head covered with long black hair, distinctly narrowed behind the eyes; the frontal furrow indistinct; the apex of the clypeus moderately arcuate; the labrum closely punctured. Thorax covered with long black hair. The median segment with a gradually rounded slope to the apex; the apex broadly depressed in the middle, where it is indistinctly transversely striated; the sides indistinctly tuberculate at the base and apex; the apical transverse keel very prominent and raised at the sides. Abdomen as long as the thorax; the apex above thickly covered with black hairs; the fourth segment with a tuft of long black hair on either side. The third transverse cubital nervure is bluntly elbowed in the middle; the second recurrent nervure is received almost in the middle of the cellule.

This is a much more slenderly built species than *P. montezuma*; the entire body and head are of a brilliant sericeous-blue; the apex of the median segment is distinctly depressed in the centre, and the slope is much more gradual, the hair also is longer and thinner. The fore wings in the middle vary in colour from bright orange to dark fuscous-orange; and the hind wings may be entirely fuscous, or fuscous from the middle only. Sometimes there is only a broad yellow band on the middle of the fore wings.

11. **Pepsis rubra.** (Tab. XII. fig. 7.)

Sphex rubra, Drury, Illustr. Exot. Ins. ii. p. 75, t. 39. fig. 6 (1773) [1].

Pepsis rubra, Mocsáry, Termes. Füzetek, ix. p. 245 [2].

Sphex auripennis, Degeer, Mém. Ins. iii. p. 585, t. 30. fig. 1[3].
Pepsis auripennis, Dahlbom, Hymen. Eur. i. p. 121[4].
Sphex cærulea, Fabr. Ent. Syst. ii. p. 219[5] (nec Linn.).
Pepsis cærulea, Fabr. Syst. Piez. p. 214[6]; Lepel. de St.-Fargeau, Hist. Nat. des Ins. Hymén. iii. p. 475[7]; Cresson, Trans. Am. Ent. Soc. i. p. 147[8].
Sphex speciosa, Fabr. Ent. Syst. ii. p. 217[9].
Pepsis speciosa, Fabr. Syst. Piez. p. 216[10].
Pompilus formosus, Say, Western Quarterly Reporter, ii. p. 76[11]; Am. Ent. iii. p. 91, t. 42. fig. 1[12]; Complete Writings, i. pp. 91, 165[13].
Pepsis formosa, Cresson, Trans. Am. Ent. Soc. i. p. 144[14].

Hab. North America[11 12], Texas[14], California[13 14].—Mexico, Northern Sonora (*Morrison*), Presidio de Mazatlan (*Forrer*), Amula and Xucumanatlan in Guerrero, Atoyac in Vera Cruz (*H. H. Smith*), Valladolid and Temax in Yucatan (*Gaumer*); Guatemala, El Reposo, Guatemala city, San Gerónimo (*Champion*).—South America[4–7], Surinam[3 4], Amazons; Antilles, San Domingo, Antigua[1].

In this species the apex of the wings is clear before the black cloud. The frontal channel is distinct, and there is a curved furrow behind the ocelli. The median segment is thickly covered with long black hair; the apex at the top is strongly keeled; there are no tubercles. The mesopleuræ are bluntly tuberculated. The hair on the apex of the abdomen is long and stiff. The third transverse cubital nervure is curved, not elbowed; at the top the third cubital cellule is three-fourths of the length it is at the bottom.

The male has the antennæ rather long and thick, covered closely with a dull microscopic pile, and with the joints very closely articulated. The apex of the clypeus is more deeply arcuate than in the female, and the head and thorax have the hair longer and thicker. Above, the apex of the abdomen has no hair, only a thick depressed pile; at the sides, the apex of the penultimate ventral segment has a sharp curved tooth; the ventral surface is entirely glabrous.

ii. *Wings violaceous or bluish.* (Species 12–21.)

c. *Antennæ with the flagellum reddish or luteous.* (Species 12–16.)

12. **Pepsis ruficornis.**

Sphex ruficornis, Fabr. Ent. Syst. ii. p. 219[1].
Pepsis ruficornis, Fabr. Syst. Piez. p. 215[2]; Dahlbom, Hymen. Eur. i. pp. 119, 463[3]; Lepel. de St.-Fargeau, Hist. Nat. des Ins. Hymén. iii. p. 480[4]; Cresson, Proc. Ent. Soc. Phil. iv. p. 134[5]; Trans. Am. Ent. Soc. i. p. 148[6]; Smith, Cat. Hymen. Ins. iii. p. 198[7].

Hab. Honduras[7].—South America[1 2 3], Cayenne[4 7]; Antilles, Cuba[5 6].

I am unable to identify this species, and think it very probable that the records may refer to the next, *P. charon*. In none of the descriptions is any mention made as to

whether the median segment is toothed or not. Cresson gives the length as from 7 to 14 lines.

13. **Pepsis charon.** (Tab. XII. fig. 4.)

Pepsis charon, Mocsáry, Termes. Füzetek, ix. p. 255 (1885)[1].

Hab. Mexico, Rincon in Guerrero 2800 feet (*H. H. Smith*), North Yucatan (*Gaumer*); Guatemala, Lanquin in Vera Paz (*Champion*); Nicaragua, Chontales (*Janson*); Panama[1] (*Boucard*), Volcan de Chiriqui 2500 to 4000 feet, Caldera (*Champion*), Chiriqui[1].

An example from the Volcan de Chiriqui has the body of a decidedly greenish tinge, with hardly a trace of blue, the wings also being much duller in tint and having an obscure greenish tinge.

The male is similarly coloured to the female, but the flagellum may have the luteous colour obscured; the clypeus does not gape so much, and has the incision at the apex angled in the middle; the tufts of hair on the fifth abdominal segment are short, very stiff, and closely pressed together; the sixth segment is thickly covered with black hair, and is roundly incised at the apex. Above, the apical two segments are covered with short black hair.

The male of the above-mentioned greenish form from Chiriqui has the antennæ of a brighter colour, and the base of the flagellum may be black.

14. **Pepsis prismatica.**

Pepsis prismatica, Smith, Cat. Hymen. Ins. iii. p. 200[1]; Cresson, Trans. Am. Ent. Soc. i. p. 148[2].

Hab. Mexico[1].

This is no doubt identical with *P. charon.*

15. **Pepsis fulvicornis.**

Pepsis fulvicornis, Mocsáry, Termes. Füzetek, ix. p. 252 (1885)[1].

Hab. Panama[1].

16. **Pepsis solitaria.**

Pepsis solitarius, Smith, Descr. of New Species of Hymen. p. 156 (1879)[1].

Hab. Costa Rica, Volcan de Irazu 6000 to 8000 feet[1] (*Rogers*); Panama, Bugaba (*Champion*).

This species has the apex of the clypeus rather deeply arcuate, and, like the labrum, finely and closely punctured; the median segment at the base and apex bluntly tuberculate, this being also the case with the mesopleuræ; the fifth ventral segment with a tuft of long, black, soft hair on either side; and the third transverse cubital nervure elbowed.

d. *Antennæ black or fuscous.* (Species 17–21.)

17. **Pepsis amabilis.**

Pepsis amabilis, Mocsáry, Termes. Füzetek, ix. p. 253 (1885)[1].

Hab. Mexico, Presidio de Mazatlan (*Forrer*), San Blas in Jalisco (*Schumann*), Teapa in Tabasco (*H. H. Smith*), North Yucatan (*Gaumer*); British Honduras, R. Sarstoon (*Blancaneaux*); Guatemala, El Reposo 800 feet (*Champion*); Panama (*Boucard*).—South America, Amazons[1].

Specimens of what I take to be the male of this species have the antennæ greyish-fuscous in colour, rather thick, slightly tapering towards the apex, and densely pruinose; the clypeus convex, with the apex arcuate; the head and thorax, especially the median segment, more densely haired; the abdomen at the apex, the œdeagus excepted, without hair (nor is there any on the ventral segments), the œdeagus densely covered with black hair.

18. **Pepsis terminata.**

Pepsis terminata, Dahlbom, Hymen. Eur. i. pp. 120, 464[1]; Mocsáry, Termes. Füzetek, ix. p. 247[2].
Pepsis ornata, Lepel. de St.-Fargeau, Hist. Nat. des Ins. Hymén. iii. p. 486[3]; Cresson, Proc. Ent. Soc. Phil. iv. p. 133[4]; Trans. Am. Ent. Soc. i. p. 148[5].

Hab. Mexico, Rincon in Guerrero (*H. H. Smith*), North Yucatan (*Gaumer*).—South America[1], Surinam[2 3], Brazil[2 3]; Antilles, Cuba[2 4 5], Martinique[2].

19. **Pepsis venusta.** (Tab. XII. fig. 9.)

Pepsis venusta, Smith, Cat. Hymen. Ins. iii. p. 196[1]; Mocsáry, Termes. Füzetek, ix. p. 247 (1885)[2].

Hab. Mexico, Presidio[2] (*Forrer*), Rio Papagaio and Xucumanatlan in Guerrero (*H. H. Smith*), Santiago Iscuintla (*Schumann*), Rinconada (*Schaus*), Valladolid and Temax in Yucatan (*Gaumer*).—South America, Brazil, Tapajos[1], Obidos[2].

The wings vary in the extent of the white cloud at the apex: in some specimens it commences at the base of the radial cellule, in others at, or beyond, its apex. An example from Santiago Iscuintla has the apex of the antennæ black, and the body more bluish and purplish than in the other specimens; but, as it agrees with them in having the sixth ventral segment deeply incised and toothed, it is referable, no doubt, to *P. venusta.*

The female I have not seen, but we have plenty of males.

20. **Pepsis centralis.**

Long. 45–48 millim.

Hab. Guatemala, El Reposo 800 feet (*Champion*); Panama, David (*Champion*).

Head and thorax deep black, with slight bluish reflections in front; the abdomen

blue, darker at the base; the antennæ with the flagellum fuscous-black. Head nearly as wide as the thorax, distinctly retreating behind the eyes, sparsely covered with blackish hair; the clypeus convex, the apex arcuate, but not quite rounded in the middle; the labrum finely punctured; the palpi with the apices of the joints testaceous; the front above the antennæ depressed, and with a deep channel in the centre. Thorax velvety, opaque; the pleuræ distinctly tuberculate; the median segment transversely striated, but not strongly, the apex denticulate. Abdomen elongate; the apex densely covered with black hairs. Legs bluish or violaceous. Wings deep, very brilliant violet.

Specimens of what I take to be the male have the antennæ brownish at the apex; they have two dense tufts of stiff hairs on the fifth ventral segment and a small tuft on the sixth segment.

P. centralis may be known from *P. amabilis* by the wings being of a brilliant violaceous colour, without a trace of black or fuscous, and by the mesopleuræ being distinctly tuberculate. The male may be known by the dense tufts of hair on the fifth ventral segment, these being absent in the corresponding sex of *P. amabilis*.

21. **Pepsis obscura.**

Pepsis obscura, Lepel. de St.-Fargeau, Hist. Nat. des Ins. Hymén. iii. p. 490[1]; Smith, Trans. Ent. Soc. Lond. 3rd ser. i. p. 36[2]; Cresson, Trans. Am. Ent. Soc. i. p. 149[3].

Hab. Panama[2].—Brazil[1].

Smith[2] remarks that the insect from Panama "agrees precisely with the description, excepting that the tips of the antennæ are yellow, which is not mentioned by St.-Fargeau; still I am inclined to believe it is the same species, and probably the male of *P. elevata*."

Fam. SCOLIIDÆ.

This well-marked family is not very numerously represented in our region; but some of its species are among the largest, most striking, and commonest of the Hymenoptera inhabiting Central America.

The family divides itself naturally into two sections—one, represented by *Scolia* and *Elis*, large, often hairy species, with reniform eyes; the other by *Myzine* and *Tiphia*, which are much smaller and have not the eyes emarginate, except in the male of *Myzine*.

As regards *Scolia* and *Elis*, it may be remarked that they vary greatly in size, and that the sculpture of the head and thorax is not always uniform in the same species, as it becomes more or less altered through their burying habits.

SCOLIA.

Scolia, Fabricius, Syst. Ent. p. 355 (1775); Saussure & Sichel, Cat. Sp. Gen. Scolia, p. 14.
Tiphia, Fabricius, Syst. Ent. ii. p. 223; Syst. Piez. p. 232 (part.).
Triscolia, Saussure & Sichel, loc. cit. p. 14.
Discolia, Saussure & Sichel, loc. cit. p. 14.

I follow Saussure and Sichel in their definition of this genus; but Kirby, Trans. Ent. Soc. Lond. 1889, p. 443, separates it into two, using the name *Scolia* for the section with three cubital cellules, and *Discolia* for that with two only.

The species are not nearly so numerous in the western as in the eastern hemisphere. As regards the arrangement of the species in this genus, as also in *Elis*, I have followed Saussure and Sichel in their well-known monograph, 'Catalogus Specierum Generis Scolia' (1864).

A. *Fore wings with three cubital cellules*=TRISCOLIA. (Species 1.)

1. **Scolia fervida.** (Tab. XII. fig. 17.)

Scolia fervida, Burm. Abh. Nat. ges. Halle, i. 4, p. 20[1]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 53[2].
Scolia ardens, Smith, Cat. Hymen. Ins. iii. p. 112[3].
Scolia montezumæ, Sauss. Rev. Zool. 1857, p. 281[4].

Hab. NORTH AMERICA, Texas[2].—MEXICO[1 2 4], Northern Sonora (*Morrison*).

The specimen from Northern Sonora has the second abdominal segment broadly red, and covered with red hairs.

B. *Fore wings with two cubital cellules*=DISCOLIA.

a. *Body and wings entirely black.* (Species 2 and 3.)

2. **Scolia azteca.**

Scolia azteca, Sauss. Rev. Zool. 1857, p. 281[1]; Ann. Soc. Ent. Fr. 1858, p. 218[2]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 128[3].
? *Scolia tristis*, Burm. Abh. Nat. ges. Halle, i. 4, p. 36[4].

Hab. MEXICO[2 3], Tampico[1], Cordova[1].

3. **Scolia monticola.**

Nigerrima, nitida, dense hirta; ventris basi non tuberculata; alis nigro-cæruleis. ♀ et ♂.
Long., ♀ 18–23, ♂ 15–18 millim.

Hab. MEXICO, Chilpancingo 4600 feet, Venta de Zopilote 2800 feet, Amula 6000 feet, Xucumanatlan 7000 feet, and Acapulco, all in Guerrero (*H. H. Smith*).

Deep black, shining; the head and thorax densely covered with a short, thick, black pubescence; the back of the abdomen densely covered with short, the ventral surface with long, black hairs. The head covered with large, distinctly separated punctures;

the mesonotum and scutellum coarsely and strongly punctured; the median segment also punctured over the entire surface, but with the punctures somewhat smaller than those on the mesonotum. Abdomen closely and finely punctured; the hair on the apical segments above long, black, and thick. Legs deep black, the spines and hair also black. Wings deep violaceous-blue.

The male is similarly coloured and clothed, the antennæ in this sex bearing a close microscopic greyish pile, which gives them a palish appearance.

It is obvious that this insect is nearly related to *S. azteca*; the latter, however, differs from *S. monticola* in having the "segmenti ventralis secundi baseos subtruncatæ tuberculum medium obtusum, ♀ minutum, fere evanidum, ♂ majus, latiusculum, medio transverse emarginatum, utrinque longitudinaliter subcarinatum."

b. *Body with yellow markings, the wings fusco-violaceous.* (Species 4 and 5.)

4. Scolia guttata.

Scolia guttata, Burm. Abh. Nat. ges. Halle, i. 4, p. 36[1]; Smith, Cat. Hymen. Ins. iii. p. 97[2]; Sauss. Ann. Soc. Ent. Fr. 1858, p. 218[3]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 130[4].

Hab. Mexico[1 2 4], San Blas in Jalisco (*Schumann*), Orizaba (*H. H. Smith & F. D. G.*), Atoyac in Vera Cruz (*Schumann*); Guatemala, Panima and San Gerónimo in Vera Paz (*Champion*); Nicaragua, Chontales (*Belt*); Costa Rica, Volcan de Irazu 6000 to 7000 feet (*Rogers*); Panama, Bugaba and David in Chiriqui (*Champion*).—Colombia[3]; Venezuela[3], Caracas[4].

This is a very variable species, not only in size (20–30 millim.), but in coloration.

The commonest form has the edge of the clypeus, a triangular mark on either side of the pronotum, a larger squarish one on the mesopleuræ below the tegulæ, the scutellum and postscutellum, a small mark on either side of the basal abdominal segment, two larger roundish marks on the second segment, two smaller ones on the third, and a transverse mark on the base of the apical segment, yellow.

A variety from Orizaba has a large mark on either side of the pronotum, a small mark on one side of the scutellum, the postscutellum entirely, a small mark in the centre of the median segment, and a larger one on either side of it, a broad transverse line on the basal segment of the abdomen, two large marks on the second segment, two somewhat smaller ones on the third, and two very much smaller ones on the fourth segment, bright lemon-yellow; another specimen from the same locality has two marks on the pronotum, the postscutellum, two marks on the base of the median segment, two marks (almost united) on the basal abdominal segment, two large ones on the second segment, two somewhat smaller ones on the third, and two much smaller spots on the fourth segment, yellow.

An example from Bugaba has two large marks on the pronotum, the scutellum, and postscutellum, and two roundish marks on the four basal abdominal segments, yellow.

In one specimen, from Costa Rica, the yellow is reduced to two marks on the second and third segments; in another, from Jalisco, Mexico, the only yellow to be seen is on the second abdominal segment, in the form of two yellow marks; and, lastly, we have two examples without any yellow whatever. In some specimens the marks are almost white, not yellow.

Our male examples do not show much variation; they have either two yellow marks on the first and second abdominal segments, or two on the second segment only.

5. **Scolia mexicana.**

Scolia mexicana, Sauss. Ann. Soc. Ent. Fr. 1858, p. 219[1]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 132[2].

Hab. Mexico [1 2].

I should say that this is very probably a form of *S. guttata.*

c. *Abdomen black, the apex reddish, the segments ciliated with red hairs; wings blackish-blue.* (Species 6 and 7.)

6. **Scolia dubia.**

Scolia dubia, Say, Bost. Journ. Nat. Hist. i. p. 364[1]; Complete Writings, ii. p. 749[2]; Sauss. Mélang. Hymén. p. 41[3]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 134[4].
Scolia aulica, Burm. Abh. Nat. ges. Halle, i. 4, p. 33[5]; Smith, Cat. Hymen. Ins. iii. p. 96[6]; Sauss. Rev. Zool. 1857, p. 281[7].

Hab. North America, United States [1], Carolina [4 5 6], Louisiana [4], Maryland [4], Tennessee [4].—Mexico [4 5].

7. **Scolia hæmatodes.**

Scolia hæmatodes, Burm. Abh. Nat. ges. Halle, i. 4, p. 33[1]; Sauss. Rev. Zool. 1857, p. 281[2]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 134[3].
Scolia dubia, Smith, Cat. Hymen. Ins. iii. p. 97[4] (nec Say).
Elis americana, Sauss. Rev. Zool. 1857, p. 282 (var. ♂)[5].

Hab. North America, United States [3], Texas [4].—Mexico [1 3 4 5].

d. *Abdomen black, marked with yellow; wings hyaline, wholly or in part.* (Species 8–10.)

8. **Scolia anceps.**

Scolia anceps, Sauss. Ann. Soc. Ent. Fr. 1858, p. 221[1]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 137[2].

Hab. Mexico [1 2].

9. **Scolia otomita.**

Scolia otomita, Sauss. Ann. Soc. Ent. Fr. 1858, p. 223[1]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 138[2].

Hab. Mexico[1 2].

10. **Scolia saussurei.** (Tab. XII. fig. 9.)

Nigra, hirta, maculis 2 pronoti postscutelloque flavis; abdomine flavo-bifasciato, apice rufo-hirto; alis fumatis. ♀.
Long. fere 14 millim.

Hab. Mexico, Jaral in Guanajuato (*Schumann*).

Head coarsely punctured; the front ocellus in a deep, round pit. Mesonotum coarsely and strongly punctured all over; the scutellum with the punctures larger and more widely separated. The median segment with the central part finely, the lateral regions more strongly punctured; the sides projecting, rounded. The head and thorax covered with fulvous hair, that on the median segment being longer and paler. The yellow marks on the pronotum are somewhat triangular. The abdomen above is covered with long fulvous hair, beneath with longer paler hair; the segments are fringed with golden-fulvous hair, the fifth and sixth densely covered all over with fulvous-golden hair; the basal segments are finely punctured; the ventral surface is much more strongly punctured, the segments fringed with pale golden hair; the third segment is for the greater part pale yellow, the black basal band projecting in the middle; the fourth segment is yellow, except for a very narrow black apical band. The legs are black, covered with long pale hair; the tarsal spines rufous. The wings are fusco-hyaline, the fore margin much darker, the dark band extending from the base to near the apex, the costa dark testaceous.

ELIS.

Elis, Fabricius, Syst. Piez. p. 248 (1804) (part.); Saussure & Sichel, Cat. Sp. Gen. Scolia, p. 14.
Campsomeris, Lepeletier de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 496 (1845).
Colpa, Lepeletier de St.-Fargeau, loc. cit. p. 534.
Trielis, Saussure & Sichel, Cat. Sp. Gen. Scolia, p. 14.
Dielis, Saussure & Sichel, loc. cit.

As in *Scolia*, *Elis* includes two sections—one with three cubital cellules, the other with two only. Kirby, Trans. Ent. Soc. Lond. 1889, p. 443, adopts these as distinct genera, using the name *Elis* for the section with three cubital cellules = *Trielis*, and *Campsomeris* for that with two cubital cellules = *Dielis*. Of *Trielis* we have no species recorded from within our limits, and the section is rare in the Nearctic region; but *Dielis* contains some of the largest and most striking of the Central American Hymenoptera.

a. *Wings blackish-violaceous; the base broadly hyaline* (Sp. 1), *or reddish-hyaline* (Sp. 2). (Species 1 and 2.)

1. **Elis vitripennis.** (Tab. XII. fig. 10.)

Scolia vitripennis, Smith, Cat. Hymen. Ins. iii. p. 108 [1].
Elis vitripennis, Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 216 [2].

Hab. Mexico [2], Tierra Colorada in Guerrero 2000 feet (*H. H. Smith*).—South America, Amazons [1], Brazil [2].

An example from Guerrero probably belongs to this species; but it hardly agrees with Smith's description [1] of the sculpture, "head and thorax strongly and closely punctured, subopaque." It has the head and thorax shining, though they are not strongly punctured. The fusco-violaceous colour of the wings reaches from the apex to the basal nervure. The yellow band on the apex of the second abdominal segment is widely interrupted, that on the third is entire above, but interrupted beneath; there are two yellow lines on the fourth segment beneath.

2. **Elis atrata.**

Scolia atrata, Fabr. Syst. Ent. p. 355 [1]; Ent. Syst. ii. p. 228 [2]; Syst. Piez. p. 239 [3]; Burm. Abh. Nat. ges. Halle, i. 4, p. 23 [4]; Smith, Cat. Hymen. Ins. iii. p. 106 [5].
Colpa atrata, Lep. de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 535 [6].
Elis atrata, Sauss. Mélang. Hymén. p. 56 [7]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 213 [8].

Hab. Panama, David in Chiriqui (*Champion*).—Antilles, Cuba [4 5 7], San Domingo [4 5], Jamaica [5 7].

A single example from the State of Panama (♂) is perhaps referable to *E. atrata* (Fabr.); it agrees fairly well with Saussure and Sichel's [8] description of the variety *a* of that species from Patagonia, although these authors also refer their insect doubtfully to *E. vittata,* Sichel.

The Panama insect may be described as follows:—Body shining, covered with a short, close, black pile; the face from a little above the antennæ coarsely and strongly punctured; the vertex shining, with a few widely separated punctures; the mesonotum with the lateral portions strongly punctured, and with two rows of punctures down the sides; the scutellum strongly punctured, except at the sides; the median segment above very closely punctured, slightly projecting in the middle, the apex covered with a silvery pile, smooth, impunctate, except for a few punctures at the sides; the mesopleuræ punctured only in front. Abdomen smooth, shining, impunctate, except at the apices of the segments, sparsely covered with black hairs, the segments fringed with short black hairs, the apical segment densely covered with dull rufous hairs; on the first segment is an almost continuous yellow mark; on each of the second to the fourth segments are two large, irregular, yellow marks, those on the second segment being

the larger. Legs black, the hairs and spines also black. The wings reddish-hyaline, the apex broadly violaceous; the costa and nervures ferruginous.

b. *Wings fusco-violaceous throughout; the body black.* (Species 3.)

3. **Elis regina.** (Tab. XII. figg. 11, ♂; 12, ♀.)

Elis regina, Sauss. Ann. Soc. Ent. Fr. 1858, p. 237[1]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 218[2].

Hab. Mexico[1 2]; Honduras, Ruatan I. (*Gaumer*).—South America, Brazil[1 2].

This may be only a form of *E. peregrina*, Lep. de St.-Fargeau (Hist. Nat. Ins. Hymén. iii. p. 534=*Scolia atrata*, Klug, in Weber & Mohr's Beitr. i. p. 21). The Honduras insect measures, ♀ 43, ♂ 28 millim. long. The head is shining, rather closely and strongly punctured below the middle, except immediately in front of the ocelli; behind the ocelli the punctures are smaller and much more widely separated. The mesonotum is shining and impunctate in the centre, the sides bearing large, widely separated punctures; the scutellum is impunctate at the base and down the middle, the sides bearing scattered punctures; the median segment is closely and strongly punctured. The abdomen has the three basal segments velvety, the three apical segments bare and shining, the apex above thickly covered with stiff, depressed, bristle-like hairs; the segments are fringed with black hairs; the ventral segments towards the apex bear hairs which originate from punctures; the apical ventral segment is punctured at the apex, and laterally projects into two stout teeth. The pleuræ (especially the propleuræ) are covered with long black hair.

A specimen of what I take to be the male of the same species has the head closely punctured, with a semicircular furrow below the ocelli; the thorax above closely punctured all over, except that the scutellum is not so thickly punctured as the mesonotum; the pleuræ and breast thickly covered with long black hair; the abdomen punctured and covered with short black hair, the ventral surface also punctured, but not so densely haired; the pronotum with two yellow marks in front; the wings subhyaline, infuscated along the costa, and not deep violaceous as in the female.

c. *Wings hyaline or yellowish-hyaline throughout; the body black.* (Species 4 and 5.)

4. **Elis hyalina.**

Campsomeris hyalina, Lep. de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 497[1].
Scolia hyalina, Burm. Abh. Nat. ges. Halle, i. 4, p. 23[2]; Smith, Cat. Hymen. Ins. iii. p. 106[3].
Elis hyalina, Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 219[4].
Elis fallax, Sauss. Mélang. Hymén. p. 62[5].

Hab. Mexico[4], Atoyac in Vera Cruz (*Schumann*); Guatemala, Coban in Vera Paz, Cerro Zunil (*Champion*); Costa Rica, Caché (*Van Patten*); Panama[4], Volcan de Chiriqui

2000 to 3000 feet (*Champion*).—SOUTH AMERICA, Guiana [4], Surinam [1 3], Brazil [2 3 4], Monte Video [4], Peru [4], Chili [4].

As in most of the allied species the colour of the wings varies.

A variety of the male has a yellow interrupted line on the second and third abdominal segments.

5. **Elis albofimbriata.** (Tab. XII. fig. 13.)

Scolia albofimbriata, Smith, Descr. of New Species of Hymen. p. 189 (1879)[1].

Hab. COSTA RICA, Caché [1] (*Rogers*); PANAMA, Bugaba, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

This species comes near *E. hyalina*, but is much smaller; the vertex behind the ocelli is smooth and impunctate; the thorax is strongly punctate, the middle of the mesonotum being impunctate; the apex of the median segment is more sharply oblique; the abdomen bears long grey hairs, and the segments at the apex are fringed with cinereous hairs (not black hairs as in *E. hyalina*); the radial cellule is longer and more sharply obliquely truncated at the apex; and the hair on the legs is cinereous, not black. The colour of the wings varies.

d. *Wings hyaline, fuscous, black, or violaceous along the costa; the abdomen black* (Sp. 6), *or with yellow markings* (Sp. 7). (Species 6 and 7.)

6. **Elis costalis.**

Campsomeris costalis, Lep. de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 497 [1].
Scolia costalis, Smith, Cat. Hymen. Ins. iii. p. 107 [2].
Elis costalis, Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 223 [3].

Hab. MEXICO (*Sallé*); HONDURAS, Ruatan I. (*Gaumer*); GUATEMALA, Panima in Vera Paz (*Champion*); COSTA RICA, Caché (*Rogers*); PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).—SOUTH AMERICA[3], Cayenne [1], Brazil [2].

7. **Elis variegata.**

Scolia variegata, Fabr. Ent. Syst. ii. p. 230 [1]; Syst. Piez. p. 241 [2]; Klug, in Weber & Mohr's Beitr. i. p. 28 [3]; Burm. Abh. Nat. ges. Halle, i. 4, p. 29 [4]; Erichs. in Schomburgk's Reisen in Brit. Guiana, iii. p. 589 [5]; Smith, Cat. Hymen. Ins. iii. p. 108 [6].
Colpa variegata, Lep. de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 544 [7].
Elis variegata, Sauss. & Sichel, Cat. Sp. Gen. Scolia, pp. 226, 303 [8].
Scolia hoffmannseggii, Klug, in Weber & Mohr's Beitr. i. p. 37 [9]; Burm. Abh. Nat. ges. Halle, i. 4, p. 29 [10]; Smith, Cat. Hymen. Ins. iii. p. 106 [11].
Scolia fuscata, Klug, in Weber & Mohr's Beitr. ii. p. 213 [12].
Scolia irregularis, Smith, Cat. Hymen. Ins. iii. p. 107 [13].
Elis lativentris, Sauss. Mélang. Hymén. p. 59 [14].
? *Colpa bistrimacula,* Lep. de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 546 [15].

Hab. Mexico (*Sallé*), Orizaba (*H. H. Smith & F. D. G.*); Panama (*Boucard*).—South America[8]; Venezuela, Caracas[8]; Guiana[5], Cayenne[1 2 7]; Brazil[7 13], Rio Janeiro[4 6], Bahia[8], San Paulo[10 11 15].

A very variable species.

e. *Wings fuscous or fusco-violaceous; the abdomen banded with red or fulvous.*
(Species 8 and 9.)

8. **Elis ephippium.**

Scolia ephippium, Say, Bost. Journ. Nat. Hist. i. p. 363[1]; Complete Writings, ii. p. 748[2].
Elis ephippium, Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 229[3]; Cresson, Trans. Am. Ent. Soc. iv. p. 201[4].
Scolia petitii, Guérin, Voy. de Coq., Zool. ii. 2, p. 249[5]; Smith, Cat. Hymen. iii. p. 109[6]; Burm. Abh. Nat. ges. Halle, i. 4, p. 21[7].

Hab. North America, Louisiana[3], Texas[4].—Mexico[1 2 5 6 7], Soledad, Xautipa, Amula, Tierra Colorada, and Rincon, all in Guerrero (*H. H. Smith*), Pinal near Puebla, Jalapa (*F. D. G.*), Paso del Macho, Cordova (*Höge*), Orizaba (*F. D. G. & H. H. Smith*); Honduras, Ruatan I. (*Gaumer*); Guatemala, Dueñas, San Gerónimo (*Champion*); Nicaragua, Chontales (*Belt*); Costa Rica, Volcan de Irazu 6000 to 7000 feet, Rio Sucio (*Rogers*); Panama, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Great variation is shown in size by this common species—in the females from 30–45 millim. The colour of the second and third abdominal segments above varies from deep reddish-orange almost to yellow; in both sexes the colour of the wings ranges from deep bluish-violaceous through fuscous, dark or pale, to almost hyaline. In the male the basal abdominal segment may be marked with orange.

I have examined an example of *E. wagneriana,* Sauss. (Cat. Sp. Gen. Scolia, p. 229), from Chimborazo, and I am inclined to look upon it as a form of *E. ephippium*, from which it is chiefly to be separated by having the wings hyaline. As pointed out above, the wings in both sexes vary in colour; and we have a male of *E. ephippium* from Costa Rica which has the wings quite as hyaline as in the typical *E. wagneriana.*

9. **Elis dorsata.**

Tiphia dorsata, Fabr. Mant. Ins. i. p. 279[1]; Ent. Syst. ii. p. 226[2]; Syst. Piez. p. 235[3].
Scolia dorsata, Klug, in Weber & Mohr's Beitr. ii. p. 212[4]; Smith, Cat. Hymen. iii. p. 106[5].
Elis dorsata, Sauss. Mélang. Hymén. p. 55[6]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, pp. 230, 308[7].
Scolia hæmatogastra, Perty, Del. Anim. Art. Bras. p. 139, t. 27. fig. 13 (♀)[8]; Erichs. in Schomburgk's Reisen in Brit. Guiana, iii. p. 589[9].
Colpa rubrida, Lep. de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 544[10].
Elis tolteca, Sauss. Rev. Zool. 1857, p. 282[11]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, pp. 231, 309[12].

Hab. North America, Lower California[12].—Mexico[12], Northern Sonora (*Morrison*),

Tampico (*Saussure* [11]), Tres Marias Is. (*Forrer*), Acapulco, Rio Papagaio, and Venta de Zopilote, all in Guerrero (*H. H. Smith*), Santiago Iscuintla in Jalisco (*Schumann*), San Lorenzo near Cordova (*M. Trujillo*), Atoyac in Vera Cruz (*H. H. Smith*), Temax in North Yucatan (*Gaumer*); Guatemala, Capetillo (*Champion*); Panama, David (*Champion*). —Venezuela [7]; Guiana [9], Cayenne [7]; Amazons; Brazil [5 7], Bahia [8]; Chili [12]; Antilles, Haiti [12], St. Thomas [12].

This common and widely distributed species shows great variation in the colour of the abdomen. In some examples the third and fourth abdominal segments only are red—either entirely or with the edges marked with black; in others, the segments from the second are entirely red, or red with the base lined with black, regularly or irregularly. The apical segment is usually black; but in rare cases it may be orange, including the hairs. In a few specimens the basal segment has a pale yellow band. The wings vary in colour from deep violaceous to pale fuscous. The species also shows great variation in size: we have a specimen from North Yucatan only 15 millim. in length, while other Mexican examples nearly reach 30 millim.

The male differs greatly from the female in coloration, it having a mark on the clypeus, another on the pronotum, and the scutellum and postscutellum yellow; while on the abdomen (instead of the red or orange colour of the female) there are four (sometimes only three) yellow fasciæ; the wings, too, are subhyaline or pale fuscous.

f. *Wings subhyaline, sometimes infuscated along the costa; the abdomen with yellow fasciæ; the head and thorax with red or cinereous hair.* (Species 10–14.)

10. **Elis plumipes.**

Sphex plumipes, Drury, Illustr. Exot. Ins. i. p. 104, t. 44. fig. 5 [1]; Christ, Linn. Natur-Syst. Ins. Hymen. t. 28. fig. 2 [2].

Elis plumipes, Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 243 [3].

Scolia radula, Fabr. Syst. Ent. p. 355 [4]; Ent. Syst. ii. p. 232 [5] (nec Syst. Piez. p. 242).

Scolia quadricincta, Klug, in Weber & Mohr's Beitr. i. p. 37 [6].

Scolia fossulana, Fabr. Syst. Piez. p. 242 [7].

Colpa fossulana, Lep. de St.-Fargeau, Hist. Nat. Ins. Hymen. iii. p. 540 [8].

Elis fossulana, Sauss. Mélang. Hymén. p. 56 [9].

Scolia confluenta, Say, Western Quarterly Reporter, ii. p. 74 [10]; Amer. Ent. p. 68, t. 29. fig. 1 [11]; Bost. Journ. Nat. Hist. i. p. 364 [12]; Complete Writings, i. p. 164 [13], ii. p. 749 [14].

Hab. North America [4 5 10–14], New York [1], Pennsylvania [3 8], Carolina [7 8], Louisiana [3], Illinois [3].—Mexico, Amula, Tierra Colorada, and Dos Arroyos, all in Guerrero (*H. H. Smith*), Jalisco (*Schumann*), Guadalajara, Cordova (*Höge*), Jalapa (*F. D. G.*), Orizaba (*H. H. Smith & F. D. G.*), Atoyac in Vera Cruz (*H. H. Smith*); Panama, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).—South America, Amazons, Brazil [3].

I refer the specimens from Central and South America to *E. plumipes* with some

doubt, as they do not agree in two particulars with the descriptions of that species, viz., the vertex has some punctures and the abdomen has only three yellow bands. The head and thorax above are densely covered with long rufous hair, the pleuræ and breast more sparsely clothed with long cinereous hair; the mesonotum is strongly punctured at the sides, and more sparsely in the centre; the scutellum and post-scutellum are closely and strongly punctured, except in the middle; the median segment is much more closely and finely punctured above than the rest of the thorax. The basal segment of the abdomen bears long cinereous hair; the second and third segments at the apex above are fringed with pale golden, the other segments with black, hair; the ventral segments are fringed with silvery hair. The legs are black, thickly covered with silvery or golden hair. The wings are fusco-violaceous, brilliantly iridescent throughout, the costa and nervures deep black. The yellow abdominal bands vary in shape, at least as regards the second and third: the first is usually entire, and the second is the largest; the second and third may take the form of one large band incised in the middle, or of two somewhat triangular separate marks.

In one specimen, from Tierra Colorada, the vertex is strongly punctured, except near the ocelli; there is a yellow mark on either side of the pronotum, and the hair on the thorax is fuscous. In another example, from Jalisco, there are two yellow marks on the pronotum, a large mark, as well as a minute one, on the scutellum, and a yellow line on the apical margin of the fourth abdominal segment; and the fifth segment is fringed with pale fuscous, the sixth with deep golden, hair.

The species varies from 15–25 millim. in length.

11. **Elis mexicana.** (Tab. XII. fig. 14.)

Nigra, capite et thorace nigro et cinereo-hirtis; abdominis fasciis 3 flavis; alis fusco-violaceis. ♀.
Long. 23–24 millim.

Hab. Mexico, Amula in Guerrero 6000 feet (*H. H. Smith*), Guadalajara in Jalisco (*Höge*).

Head above the point of insertion of the antennæ covered with long black, below it with paler, hair; the vertex strongly and closely punctured behind and round the eyes, more sparsely so in the middle; the clypeus strongly but sparsely punctured. The pro- and mesonotum covered thickly with long black hair; the median segment and the pleuræ bearing long cinereous hair. The mesonotum coarsely punctured, except in the middle, where it is smooth and shining; the scutellum strongly punctured laterally. The median segment very closely punctured throughout, the punctures being much smaller than those on the mesonotum, the sides rounded. Abdomen at the base, on the ventral surface, and to a less extent in the middle of the back, bearing long grey hair; the apical segments with black hairs; the segments fringed at the apex with black hairs. Legs black, covered with long cinereous hair; the spines on

the fore tarsi rufous. The basal abdominal segment has the apical half yellow, the yellow being in the middle slightly produced and incised; the second segment is entirely yellow, except the external base and apex; the third segment may be almost entirely yellow, or the yellow may be narrowed and incised in the middle. The wings are uniformly fusco-violaceous, or they may be darker along the costa, the costa and the nervures black.

This species is not unlike *E. thoracica* (Fabr.); but the yellow bands on the abdomen, the strongly punctured vertex, and the very closely punctured median segment separate it at once. From *E. plumipes*, the black hair on the head and thorax, the much more strongly punctured vertex and thorax, and the uninterrupted large yellow band on the second segment serve to distinguish it.

12. **Elis trifasciata.**

Tiphia trifasciata, Fabr. Ent. Syst. ii. p. 226[1]; Syst. Piez. p. 235[2].

Scolia trifasciata, Klug, in Weber & Mohr's Beitr. i. p. 32[3]; Burm. Abh. Nat. ges. Halle, i. 4, p. 30[4]; Smith, Cat. Hymen. Ins. iii. p. 108[5].

Elis trifasciata, Sauss. Ann. Soc. Ent. Fr. 1858, p. 245[6]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, pp. 247, 310[7].

Scolia radula, Fabr. Syst. Piez. p. 242[8]; Burm. Abh. Nat. ges. Halle, i. 4, p. 28[9].

Colpa alexandri, Lep. de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 543[10].

Hab. NORTH AMERICA[3 7 8], South Carolina[9].—MEXICO, Northern Sonora (*Morrison*), Omilteme 8000 feet, and Amula 6000 feet, both in Guerrero (*H. H. Smith*), Orizaba (*H. H. Smith & F. D. G*), Temax in North Yucatan (*Gaumer*); GUATEMALA, San José (*Champion*).—SOUTH AMERICA[3], Caracas[7], Cayenne[7], Amazons[7], Brazil[4 5 7 9]; ANTILLES, Cuba[7], Haiti[7], Guadaloupe, Martinique[9], St. Thomas, San Martin[7].

Two specimens of what I cannot but regard as a variety of this species, notwithstanding a very marked difference in the alar neuration, have been received from North Yucatan; both of them are, unfortunately, very much rubbed, but there is every appearance of the head and thorax having been covered with fulvous pubescence as in typical *E. trifasciata.* The remarkable point about them is that they have the neuration of *Liacos,* that is to say, instead of the two recurrent nervures running parallel or nearly so as in typical *Elis,* and not touching each other, the first recurrent instead of proceeding to the cubital nervure does not touch it at all, but runs into the second recurrent nervure, thus forming a closed petiolate discoidal cellule. Although, as stated, I have seen two specimens with this type of neuration, yet I must regard it as an aberration and not typical of the true *Liacos,* which is only known from the Oriental and Australian zoological regions. Moreover, in one example the first recurrent nervure in the left wing runs into the second, and in the right wing the second nervure runs into the first, quite close to the cubital nervure; and in another specimen the recurrent nervures in

the right wing do not touch at all. In some typical specimens the recurrent nervures approach each other nearer than they do in others.

In the two specimens mentioned above the head is without punctures; the mesonotum is strongly and coarsely punctured all over; and the scutellum is hardly, the median segment very finely, punctured. The basal abdominal segment has a broad yellow band on the apex, with a black mark in the middle; the second segment has an irregular yellow mark in its apex; the third segment has a straight yellow uninterrupted band; and the two apical segments are densely covered with reddish-fulvous hair. The tibiæ and tarsi are reddish. The wings are yellowish-hyaline, with a yellowish-fuscous cloud along the fore margin.

Similar instances of difference in the alar neuration have been recorded (*cf.* Saussure and Sichel, Cat. Sp. Gen. Scolia, p. 282), and they seem to lead to the conclusion that too much reliance cannot be placed on the form of the discoidal cellule, or even the cubital cellule, as an aid in generic differentiation.

In *E. trifasciata* I find great variation in the sculpture of the mesonotum; the depth and strength of the puncturing depends on the freshness of the specimens—on the amount of digging in the sand which the individuals have done.

13. **Elis tricincta.**

Tiphia tricincta, Fabr. Syst. Ent. p. 354 [1]; Ent. Syst. ii. p. 227 [2]; Syst. Piez. p. 235 [3].
Scolia tricincta, Burm. Abh. Nat. ges. Halle, i. 4, p. 30 [4].
Elis tricincta, Sauss. Ann. Soc. Ent. Fr. 1858, p. 246 [5]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 248 [6].

Hab. Mexico [6], Omilteme 8000 feet, Acapulco, Amula 6000 feet, Dos Arroyos 1000 feet, all in Guerrero (*H. H. Smith*), Atoyac in Vera Cruz (*Schumann*), Orizaba (*F. D. G. & H. H. Smith*), Omealca near Orizaba (*M. Trujillo*), North Yucatan (*Gaumer*); Guatemala, Zapote, San Gerónimo (*Champion*); Nicaragua, Chontales (*Janson*); Costa Rica, Caché (*Rogers*).—Antilles [4 5], Cuba [6], Haiti [6], St. Thomas [6].

The yellow abdominal marks vary in shape: in some examples they are entire, more or less incised in the middle; in others they are divided into two. In one example (from Orizaba) there is an interrupted line on the fourth segment, the second and third ventral segments having also two yellow lines. The wings also vary in colour; usually they are hyaline or subhyaline, with the apex more or less infuscated, but some examples have them uniformly fusco-violaceous. In most of the examples I have seen the femora are black, and the tibiæ and tarsi rufous.

14. **Elis limosa.**

Scolia limosa, Burm. Abh. Nat. ges. Halle, i. 4, p. 28 [1].
Elis limosa, Sauss. Ann. Soc. Ent. Fr. 1858, p. 246 [2]; Sauss. & Sichel, Cat. Sp. Gen. Scolia, p. 230 [3].

Hab. Mexico [1 2 3].

EPOMIDIOPTERON.

Epomidiopteron, de Romand, Ann. Soc. Ent. Fr. 1835, p. 653; Saussure & Sichel, Cat. Sp. Gen. Scolia, p. 264.

This is a genus of small extent, and purely a neotropical one.

1. **Epomidiopteron sumichrasti.**

Epomidiopteron sumichrasti, Sichel, in Sauss. & Sichel's Cat. Sp. Gen. Scolia, p. 267 [1].

Hab. Mexico [1].

2. **Epomidiopteron aureo-hirtum.** (Tab. XII. fig. 8.)

Nigrum, punctatum, aureo-hirtum; alis flavo-hyalinis. ♀.
Long. 11 millim.

Hab. Guatemala, San Gerónimo (*Champion*).

Head coarsely punctured, densely covered with long fulvous hair; the clypeus finely punctured and covered with fulvous hair; the mandibles reddish in the middle. The scape of the antennæ strongly punctured, bearing long fulvous hair, and rufous at the apex; the flagellum thick, covered with a fulvous pubescence. The pro- and mesothorax densely covered with fulvous hair. The pronotum apparently punctured, but the punctuation cannot be well seen from the thick hair covering it; the propleuræ striolate throughout; the mesonotum with large, widely separated punctures; the lateral depression wide and deep; the scutellum and postscutellum punctured; the median segment in the centre coarsely shagreened, the sides irregularly reticulate, the central keel straight, the lateral keels oblique, becoming united at the apex to the central one. The mesopleuræ are coarsely punctured; the metapleuræ striolate. The abdomen is closely punctured throughout; the segments at the apex thickly fringed with golden hair; the pygidium closely punctured, reddish, the base covered thickly with long fulvous hair. The legs thickly covered with silvery hair, the hair on the outer side of the hind tibiæ golden; the apices of the tarsi rufous, the calcaria white. The third cubital cellule is longer than the first and second cellules united; the first recurrent nervure is received about the same distance from the base that the second is from the apex of the cellule. Tegulæ large, dull rufous.

This species is evidently very near the preceding, but differs from it in having the tegulæ large, and the third cubital cellule longer than the first and second cellules united (in *E. sumichrasti* it is apparently only the length of the second). The relative lengths of the cellules are not mentioned by Sichel; but from his remarks (Cat. Spec. Gen. Scolia, p. 264) I conclude that his figure (t. 1. fig. 8) of the wing is applicable to *E. julii* and *E. sumichrasti*, in which case the neuration is different from that of our species. Sichel (*op. cit.* p. 269) suggests that *E. sumichrasti* should form the type of a new genus or subgenus, for which he proposes the name *Paratiphia*. Not having an

example of *E. julii* for comparison, I am unable to offer an opinion as to this. The base of the abdomen is truncated, and is keeled at the top, and formed as it is in some species of *Odynerus*. The claws are sub-bifid. The chief difference between *Paratiphia* and *Tiphia* is that the former has three transverse cubital nervures; but the first is not complete, it being broken off before reaching the cubital nervure. *Paratiphia* has the radial nervure open at the apex as in *Tiphia*.

3. **Epomidiopteron elegantulum.**

Epomidiopteron elegantulum, Smith, Journ. Ent. i. p. 79[1].

Hab. Mexico (*Mus. Brit.*[1]).

4. **Epomidiopteron nigrum.**

Nigrum, fulvo-hirtum; alis fere hyalinis. ♀.
Long. 11 millim.

Hab. Mexico, Xucumanatlan in Guerrero 7000 feet (*H. H. Smith*).

Head coarsely punctured, the punctures confluent, covered thickly with long, pale fulvous hair; the clypeus not projecting in the middle, the apex rounded, covered with fulvous hair; the labrum rounded at the apex, projecting; the mandibles black, sparsely covered in the middle with fulvous hair. The antennæ short and thick, the scape punctured, and bearing long white hair; the flagellum covered with a pale microscopic down; the third joint a little shorter than the fourth. The pro- and mesonotum thickly covered with fulvous pubescence, coarsely and uniformly punctured, except an impunctate space in the centre of the mesonotum; the pro- and metapleuræ striolate; the mesopleuræ strongly punctured, and covered with long, pale fulvous hair. The median segment finely rugose; the top striolate at the sides at the apex; the central keel sinuate, the lateral keels approximating at the apex. Abdomen at the base finely, towards the apex more strongly and closely, punctured, shining; the suture at the base of the second segment bulging out in the middle; the basal segment truncated behind, the keel on the top slight but distinct; the apical segment densely covered with long, fulvous hair, apparently strongly punctured; the ventral surface punctured, the segments at the apex fringed with long, pale fulvous hair. The tibiæ and tarsi densely covered with white pubescence, the tibiæ on the outer side with some stout black spines. The third cubital cellule at the top longer than at the bottom, shorter than the first and second cellules united; the first recurrent nervure received shortly in front of the middle, the second nervure in the apical fourth of the cellule; the stigma black.

5. **Epomidiopteron smithi.**

Long. 9 millim.

Hab. Mexico, Acapulco in Guerrero (*H. H. Smith*).

Head covered with large, deep, non-confluent punctures; very sparsely and shortly haired; the ocelli in pits. The antennæ short and thick; the scape beneath with some long white hairs; the flagellum covered with a microscopic pubescence. The pronotum with large, deep punctures, except at the apex, which is, as usual, impunctate; the mesonotum with a few large and small punctures; the lateral furrows deep; the sides with a row of large punctures. The scutellum with a few punctures; the postscutellum more closely and finely punctured. Median segment strongly shagreened, at the apex rather strongly striolate; the middle keel not reaching the apex; the propleuræ punctured throughout; the mesopleuræ moderately strongly punctured. Abdomen with the basal segment more strongly punctured than the others; the second segment with scattered shallow punctures, the third with fewer punctures, the fourth finely punctured at the apex, the fifth more strongly punctured at the apical half, and the sixth rugosely punctured, reddish at the apex; the third and following segments fringed at the sides with long white hairs, the fifth also at the apex; the ventral segments punctured and fringed with whitish hair. The tibiæ and tarsi fringed with glistening-white hair; the tibial spines black; the calcaria white. The first recurrent nervure is received in the basal third of the cellule, and is elbowed near the top, the second received shortly beyond the middle; the third cubital cellule at the top longer, at the bottom shorter, than the first and second cellules united.

Nearly related to *E. nigrum*; but that species may be known from it by the head and thorax being densely pilose, the pronotum having the punctures smaller and closer, its apex, too, being punctured, the mesonotum more thickly punctured, the pygidium densely covered with golden hair, and the hair on the tibiæ fulvous, not glistening white.

6. **Epomidiopteron canaliculatum.**

igrum; abdominis apice dense fulvo-hirto; alis fulvo-hyalinis. ♀.
Long. 8 millim.

Hab. Mexico, Acapulco in Guerrero (*H. H. Smith*).

Head densely punctured, the punctures closely set, but not confluent; the clypeus finely punctured; the labrum rounded, carinate in the middle, dull piceous, fringed with fulvous hair; the mandibles ferruginous, black at the base and before the apex; the front, vertex, and occiput bearing fuscous hair. The scape of the antennæ punctured, bearing a few white hairs; the flagellum covered with a fuscous down; the basal joints projecting beneath. The basal half of the pronotum coarsely punctured; the mesonotum strongly punctured, sparsely in the middle, the sides next the tegulæ impunctate. Scutellum sparsely, the postscutellum more finely and closely punctured. Median segment coarsely alutaceous; the apex depressed and crenulated; along the sides is a sinuated, crenulated channel; the lateral keels curved, the central keel straight

and thicker than them. The propleuræ striolate, the top indistinctly punctured; the mesopleuræ strongly punctured, sparsely covered (as is also the breast) with long white hair. The abdomen covered with shallow punctures; the sides of the second, third, and fourth segments, and the fifth entirely, fringed with pale fulvous hair; the pygidium densely covered with long fulvous hair at the base, the apex reddish, finely punctured; the ventral surface punctured, the segments fringed with pale fulvous hair; the hypopygium fringed at the sides with short thick hairs.

The coxæ and femora sparsely, the tibiæ and tarsi densely, covered with long silvery hair, the tibiæ with golden hair on the outside; the hind coxæ punctured; the calcaria, tarsal spines, and claws reddish; on the hinder femora in the centre is a short tooth. The first recurrent nervure is received before the middle, the second in the apical third; the third cubital cellule at the top is longer, at the bottom shorter, than the first and second cellules united.

This species may be easily known from the others here described by the sinuated channel on the median segment, and by the toothed hinder femora.

7. **Epomidiopteron rufitarse.**

Nigrum, clypeo albo; flagello antennarum, tibiis anticis, tarsisque rufis; alis fusco-hyalinis, stigmate fusco. ♂. Long. 7 millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Head closely covered with more or less confluent punctures, sparsely clothed with longish fuscous hair; the clypeus finely punctured, thickly covered with white hair; mandibles ferruginous, black at the base and apex. Pronotum closely punctured, except at the extreme apex, which is margined with white; the base at the top keeled; the mesonotum and scutellum with the punctures larger than on the pronotum; the median segment with a keel down the middle, and a transverse keel across the middle, the latter dividing the segment into two parts, the apical part strongly striolated, the basal part aciculated, and with four longitudinal keels. The pro- and metapleuræ striolated, the former punctured at the top; the mesopleuræ strongly punctured. Abdomen punctured, at the base strongly, the punctuation becoming weaker towards the apex; the sides of the dorsal and the whole of the ventral segments fringed with fulvous hair; the pygidium punctured, reddish at the apex, the centre keeled; the hypopygium not keeled. The tibiæ and tarsi densely, the femora sparsely, covered with silvery hair; the calcaria pale reddish. The third cubital cellule at the top longer, at the bottom distinctly shorter, than the first and second cellules united; the second recurrent nervure received in the middle of the cellule.

I cannot with any certainty unite the male from which the above description is taken to any female *Epomidiopteron* known to me. Sichel describes a variety of the male of

E. sumichrasti with the tarsi and fore tibiæ reddish; but in other respects it does not agree with the male here described.

8. **Epomidiopteron saussurei.**

Nigrum, nitidum; alis fulvo-hyalinis, nervis testaceis, costa nigra. ♀.
Long. 5–6 millim.

Hab. Mexico, Tierra Colorada in Guerrero 2000 feet (*H. H. Smith*).

Head shining, sparsely haired, covered with large, widely separated punctures. The scape of the antennæ shining, almost glabrous; the flagellum with a fuscous pile. The top of the pronotum at the base transversely carinate; the base with large, widely separated punctures; the apex impunctate. The mesonotum and scutellum with large scattered punctures. Median segment finely rugose; the apex crenulated; the triangular area with some irregular striæ at the base; the central keel does not reach the apex. The pro- and metapleuræ deeply excavated; the former finely, closely striolated at the bottom, the latter more strongly striolated at the apex. Abdomen very shining, bearing very shallow, fine, widely separated punctures; the sides, the fifth segment, and the ventral segments fringed with white hairs; the pygidium at the base coarsely, at the apex finely, punctured and reddish, the basal part with long fulvous hair. The tibiæ and tarsi thickly fringed with silvery hair; the tarsal spines and the apical joints of the tarsi reddish; the calcaria white. The third cubital cellule at the top and bottom shorter than the first and second cellules united; the second recurrent nervure received shortly before the apical third of the cellule.

This little species differs from the others here described in having the third cubital cellule at the top and bottom shorter than the first and second cellules united.

TIPHIA.

Tiphia, Fabricius, Ent. Syst. ii. p. 223 (1793) (part.).

Comparatively few species of this genus have been recorded from the Nearctic or Neotropical regions. The species are closely allied, and show no great difference in structure and hardly any in coloration, being all black, with the tibiæ and tarsi and the apical abdominal segments clothed with white or fulvous hair. Two of our species approximate to *Paratiphia* in having the basal segment of the abdomen carinate; and another has the first transverse cubital nervure present, but it is not quite so long as in the typical *Paratiphia*. None of these species, however, have the area on the median segment triangular.

A. *The basal segment of the abdomen not carinate.* (Species 1–9.)

i. *Fore wings with two transverse cubital nervures.* (Species 1–8.)

1. **Tiphia elegans.** (Tab. XII. fig. 16.)

Nigra, nitida, sparse punctata; alis flavis. ♀ et ♂.
Long. 18 millim.

Hab. Mexico, Omilteme 8000 feet, Chilpancingo 4600 feet, both in Guerrero (*H. H. Smith*).

Head shining, very sparsely covered with long fuscous hairs; bearing on all parts large, widely separated punctures, which become smaller and less numerous behind the ocelli; clypeus finely punctured and fringed with long fulvous hair; the apical three-fourths of the mandibles piceous. The scape of the antennæ sparsely punctured, and fringed with long fulvous hair; the flagellum stout, densely covered with a microscopic fulvous pile and at the base with some hairs; the third and fourth joints subequal. The pronotum bearing some long pale fulvous hairs; the apex impunctate, the other parts (except the vertical base) with distinctly separated punctures; the base impunctate and with a distinct border; the propleuræ, except at the top, obliquely striated. The mesonotum shining, very sparsely haired, the base impunctate, the sides with a few large punctures; the centre depressed, closely punctured, a deep furrow at the sides. The scutellum with scattered punctures, the middle impunctate. The median segment shagreened; the central line thicker than the two lateral lines, and dilated towards the apex, the lateral lines curved at the base; at the sides there are two keels running to the spiracles; the apex is sharply oblique. The mesopleuræ are punctured; the metapleuræ above strongly, obliquely punctured. The breast is covered with long white hair. The abdomen is shining; the second segment at the base crenulated; the third to the fifth segments obscurely punctured at the apex and fringed with long pale hair, which becomes longer towards the apex; the pygidium at the base irregularly rugose, the apex rufous, the base covered with pale hair; the ventral segments punctured at the apex and fringed with pale hair. Legs: the femora and coxæ sparsely covered with long white hair, the tibiæ and tarsi more densely clothed with shorter pale silvery hair; the tarsal spines and the claws rufous; the calcaria dull rufous; the coxæ punctured. The first recurrent nervure is received in the middle, the second in the apical fourth of the cellule.

The male is similarly coloured to the female. It has the head much more strongly and coarsely punctured; the oral region more densely covered with long white hair; the clypeus projecting squarely in the middle, where it is transverse, and strongly punctured; the antennæ as long as the thorax, thick, the scape closely punctured and covered with long white hair; the flagellum bearing a very fine microscopic pile, the third and fourth joints subequal; the punctuation on the pronotum extending quite close to

its apex, that on the mesonotum closer and uniform, this being also the case with the scutellum and postscutellum; the median segment more coarsely shagreened; the propleuræ without striations; the metapleuræ at the base more deeply excavated, the apex much less strongly striated; the basal segments of the abdomen slightly, the other segments more strongly punctured, the punctuation becoming stronger and coarser towards the apex; the hypopygium reddish at the base and apex, the base impunctate, the remaining portion strongly punctured; and the ventral segments much more strongly punctured. As in the female, the central furrow on the median segment is thickened. The alar stigma is black. Length 13–14 millim.

2. **Tiphia guatemalensis.**

Nigra, capite et thorace dense albo-hirtis; alis fusco-hyalinis.
Long. 16 millim.

Hab. GUATEMALA, Zapote (*Champion*).

Head very strongly punctured, densely covered with long fuscous hair; the clypeus punctured at the base, the middle not projecting. The scape of the antennæ punctured, covered with long pale fulvous hair; the flagellum densely covered with a fuscous pile, the basal joints projecting beneath. The pronotum strongly punctured at the base, thickly covered with pale fulvous hair, the sides shagreened, finely striated beneath; the mesonotum strongly punctured, except at the sides, covered with long fulvous hair; the scutellum and postscutellum with scattered punctures; the median segment shagreened; the mesopleuræ with not very strong punctures, the metapleuræ strongly striolate. The abdomen not very shining; the basal segments sparsely punctured, the apical ones closely punctured and fringed with long pale hairs; the pygidium strongly punctured, densely covered with long pale hair; the ventral segments punctured and haired like the dorsal segments. The legs covered with long white hair; the tarsal spines reddish, the calcaria piceous. The first recurrent nervure is received shortly beyond the middle, the second close to the apical fourth of the cellule.

This species is closely related to *T. azteca*, but it is larger; the wings are much lighter in tint; the first recurrent nervure is received further from the second transverse cubital; the middle of the clypeus does not project from the sides, but is continuous with them; and the mesonotum is strongly punctured.

3. **Tiphia azteca.**

Nigra, alis fuscis. ♀.
Long. 15 millim.

Hab. MEXICO, Orizaba (*H. H. Smith & F. D. G.*).

Head strongly punctured all over, except in front of the ocelli, where there is an impunctate space; sparsely covered with moderately long pale hair; the clypeus with

the middle broadly projecting in the centre, the apex transverse, finely punctured, except at the extreme base, fringed at the sides and at the middle with long fulvous hair; the mandibles rufous, black at the base and apex, and fringed with long fulvous hair. The antennæ have the scape punctured and covered with long white hair, the flagellum, especially on the lower side, with a pale pubescence. The pronotum with large punctures at the base, densely covered (especially at the base) with long pale hair; the pleuræ obliquely striated beneath: the upper part impunctate. The mesonotum with the middle strongly punctured, the sides with a pair of punctures at the base and apex; the apex with pale fulvous hair, this being also the case with the scutellum, which bears scattered punctures, except in the middle; the postscutellum with scattered punctures. The median segment shining, impunctate, the apex alutaceous; the central keel straight, the lateral keels curved; the mesopleuræ rather strongly punctured, the metapleuræ strongly obliquely striolate. The abdomen shining; the basal segment sparsely, the apical segment more strongly and closely, punctured; the furrow at the base of the second segment deep, crenulated at the sides; the second and following segment fringed with long pale hair; the hypopygium coarsely punctured, thickly covered with long white hair, the extreme apex rufous; the ventral surface punctured and haired like the dorsal surface. The legs are thickly covered with long silvery hair; the spines on the apices of the tarsal joints are rufous; the three spines on the metatarsus are black. The wings have some hyaline lines and spots; the first recurrent nervure is received beyond the middle, the second close to the apex of the cellule.

4. **Tiphia montezuma.**

Long. ♀ 14, ♂ 12 millim.

Hab. Mexico, Navarrete, Tepic (*Schumann*), Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Head strongly punctured, the punctures not confluent; the oral region and the cheeks over the antennæ less strongly punctured; the ocelli in deep pits; covered with long pale fulvous hair; the clypeus fringed with golden hair, the apex depressed, impunctate; the mandibles ferruginous, black at the base and apex, fringed with long golden hair. The scape of the antennæ with large punctures and covered with long golden hair, shining; the flagellum covered with a microscopic pubescence, fuscous beneath, the third and fourth joints subequal. The pronotum strongly punctured, except a semicircular space at the apex, which is smooth and glabrous, the punctured part being covered with longish hair; the oblique base is finely punctured and pilose. The mesonotum has large, scattered, widely separated punctures and a scattered pubescence. The base of the scutellum is smooth and glabrous, the apex punctured, and bearing long pale fulvous hairs; there runs down the middle of the punctured

part an impunctate band, which appears to be slightly raised; the postscutellum is punctured. The median segment is shining, slightly shagreened; the lateral keels distinct, slightly converging towards the apex; there are two central keels, which do not reach the apical keel, the space at the apex bounded by them being depressed; the apex is excavated. The propleuræ shining, the lower half obliquely striolated; the mesopleuræ closely punctured, the punctures about half the size of those on the mesonotum, thickly covered with fuscous hairs; the metapleuræ deeply excavated, shining, impunctate at the base, the apex obliquely striolate. The basal segment of the abdomen broader than long, with scattered punctures, the base bearing long fuscous hair; the second and third segments with scattered punctures, and with a continuous row of them at the apex; the fourth segment with more punctures and with a broader and deeper row at the apex; the fifth segment strongly punctured throughout; the sixth segment at the base coarsely punctured, the apex reddish, very finely and closely punctured; the third, fourth, and fifth segments at the sides bear long white hair, the fifth more thickly haired than the others; the sixth is thickly covered with long pale fuscous hair; the ventral segments are punctured from the base of the second and covered with long pale hairs, especially at the apices. The tibiæ and tarsi are thickly covered with silvery hair; the thick spines on the top of the hinder tibiæ are reddish, this being also the case with the tarsal spines. The wings are fusco-hyaline, the stigma black, the nervures brownish; the first recurrent nervure is received shortly beyond the middle, the second in the apical third of the cellule; the second nervure is sinuate and has a short branch below the middle.

This species approaches *T. guatemalensis*; but the punctuation of the head and pronotum is stronger; the ocelli are in pits; the scutellum is only punctured at the apex; the median segment is shorter compared to the mesothorax, and it wants the central keel; the metapleuræ are more deeply excavated; the abdomen is shorter compared to the thorax, much more shining, the suture on the second segment not crenulated; and the spines on the hind tibiæ are reddish.

5. **Tiphia trichiosoma.**

Long. 13 millim.

Hab. GUATEMALA, San Gerónimo (*Champion*).

Head densely covered with long fuscous hair and large, distinctly separated punctures; the clypeus finely punctured, and fringed with golden hair; the mandibles ferruginous and bearing some long fulvous hair. The scape of the antennæ impunctate, covered with long pale hair; the basal joints of the flagellum covered with short fuscous hair, the other joints with a microscopic pile. The pro- and mesonotum and the mesopleuræ densely covered with fuscous hair; the pronotum nearly as strongly

punctured as the head, except the apex, which is shining and impunctate; the mesonotum with large widely separated punctures; the scutellum smooth, the apex and sides with large punctures; the postscutellum strongly punctured. The median segment shagreened, the sides of the apical part punctured; the lateral keels slightly curved, converging a little towards the apex; the middle keel straight, thickened at the base; the lower part of the propleuræ and the apical part of the metapleuræ striolate. The dorsum of the abdomen slightly punctured, the punctuation becoming closer and stronger as the apex is reached; the pygidium with the basal three-fourths coarsely, the apex very finely and closely, punctured, the sides irregularly striolate; the second and following segments fringed with long grey hair; the ventral surface punctured, the segments thickly fringed with long grey hairs. The tibiæ and tarsi thickly covered with silvery hair; the tibial spines testaceous at the apex; the tarsal spines ferruginous; on the basal joint of the tarsi are two stout ferruginous spines. Wings fuscohyaline, the nervures and stigma blackish; the second cubital cellule at the top a little longer than the first; the first recurrent nervure received shortly beyond the middle, the second in the apical fourth of the cellule.

May be known from *T. montezuma* by its much more pilose body, by the more strongly punctured abdomen, and by the hind tarsi being exactly twice the length of the tibiæ, while *T. montezuma* has them at least 1 millim. longer than that.

6. **Tiphia clypeata.**

Tiphia clypeata, Smith, Descr. of New Species of Hymen. p. 187 (1879) [1].

Hab. Mexico, Oaxaca [1].

7. **Tiphia subspinosa.**

Tiphia subspinosa, Smith, Descr. of New Species of Hymen. p. 187 [1].

Hab. Mexico [1].

8. **Tiphia intricata.**

Tiphia intricata, Smith, Descr. of New Species of Hymen. p. 188 [1].

Hab. South Mexico, Eastern slope of the mountains and Oaxaca [1].

ii. *Fore wings with three transverse cubital nervures, the first abbreviated.* (Species 9.)

9. **Tiphia gaumeri.**

Long. 9 millim.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Head shining, bearing moderately large, widely separated punctures; the cheeks and the clypeus with long fulvous hair, the vertex almost glabrous; the middle of the

clypeus slightly projecting, the projection impunctate, shining, and depressed; the mandibles ferruginous, black at the base and apex. Pronotum with the basal half with large, separated punctures; the apical half impunctate. The mesonotum with a few scattered punctures, the sides impunctate. Scutellum with large punctures at the sides and apex, and some smaller ones down the centre; postscutellum sparsely punctured. Median segment shining, impunctate; the sides of the apical slope shagreened; the central furrow thickened. The pro- and metapleuræ deeply excavated, the former at the bottom and the latter at the apex striolated; the mesopleuræ punctured and sparsely covered with white hair. Abdomen with scattered punctures, which become stronger towards the apex; the basal segment with a keel at the apex; the suture on the second segment wide and deep, crenulated at the sides; the sides and the apices of the fourth and fifth segments with long whitish hair; the pygidium longitudinally punctured, the apex reddish, covered with long pale hair; the ventral segments closely punctured, fringed with long pale hair. The tibiæ on the outer side and the tarsi covered with glistening white hair; the tibial spines black; the calcaria and the tarsal spines rufous; the metatarsus with two stout black spines in the middle. Wings with the nervures fuscous; the first recurrent nervure received in the middle, the second shortly beyond the middle of the cellule; from the base of the radial nervure issues a short nervure, as in *Epomidiopteron*, but it is not so long; the costal cellule is pure hyaline, and there is a hyaline cloud in the first cubital cellule.

Characteristic of this species is the broken first transverse cubital nervure. The abdomen and the keels of the median segment are formed as in *Tiphia*.

B. *The basal segment of the abdomen carinate on the top at the base.*

(Species 10 and 11.)

10. **Tiphia carinata.**

Long. 12 millim.

Hab. Mexico, Chilpancingo 4600 feet, Tierra Colorada 2000 feet, both in Guerrero (*H. H. Smith*).

Head rather strongly punctured, the punctures not confluent; the clypeus less strongly punctured; the front ocellus in a pit; the hair very sparse and short. The scape of the antennæ with large punctures, the lower side with long pale fulvous hair; the flagellum densely covered with pale fulvous pubescence. The pronotum strongly punctured, except a broad semicircular band at the apex; the centre of the mesonotum strongly punctured; the scutellum with a row of large punctures round the edges; the postscutellum less strongly punctured than the pronotum; the median segment shagreened, the apex on either side of the keels crenulated, the lateral keels straight, slightly converging towards the apex, the central keel irregular. The propleuræ with some punctures in front, the bottom striolate; the mesopleuræ strongly

punctured, sparsely haired; the metapleuræ strongly striolate. The first segment of the abdomen at the base semiperpendicular, at the top carinate; the segments punctured more densely towards the apex, and fringed with pale fulvous hair; the pygidium coarsely punctured, the edges fringed with pale fulvous hair; the ventral surface rather strongly punctured, the segments fringed with pale fulvous hair. The tibiæ and tarsi covered with silvery hair; the femora stout, dilated, punctured in front and with pale hairs, behind shining, glabrous; the fore tarsi short, thick, the spines reddish, the base of the metatarsus incised; the long spur of the fore tibiæ cleft at the apex. The second cubital cellule at the top longer than the first; the first recurrent nervure sinuate, received shortly beyond the middle, the second nearly in the middle of the cellule.

The form of the first abdominal segment is quite as in *Epomidiopteron*, and the species may really belong to that genus; but, on the other hand, the male has not the clypeus white, nor the third cubital cellule narrowed towards the radial and pointed towards the apex; nor in either sex is the enclosed space on the median segment triangular.

The male has the head and thorax more pilose; the clypeus projecting in the middle and fringed with long white hair; the smooth space on the apex of the pronotum much smaller; the mesonotum uniformly punctured throughout; the punctuation of the abdomen not so close; the hair on the apices of the segments much sparser; the first segment longer than broad, narrow at the base, dilated and raised at the apex; the second segment with a deep crenulated suture at the base; the femora not dilated; the tibiæ and tarsi, and the femora to a less extent, covered with white hair; the hind tibiæ with the edges serrulate; the fore tarsi incised at the base (as in the female); and the calcaria bifid at the apex. The wings are as in the female; the second transverse cubital nervure is faint, almost obliterated in the middle; the stigma is black.

T. carinata may be known from *T. trichiosoma* by the body not being densely pilose; the pygidium coarsely punctured throughout; the metatarsus, instead of having only two longish ferruginous spines, has, apart from the apical one, four shorter, thicker black ones; the second recurrent nervure received in the middle of the cellule; the fore metatarsus incised; and the first abdominal segment keeled at the top.

11. **Tiphia rugosa.**

Long. fere 15 millim.

Hab. Mexico, Venta de Zopilote in Guerrero 2800 feet (*Smith*).

Head covered with large, deep, distinctly separated punctures; sparsely covered with long white hair; the front ocellus in a pit, and behind it on either side is an oblique row of five or six confluent punctures; the mandible piceous in the middle;

the scape of the antennæ punctured, beneath bearing long white hair; the flagellum with a fuscous pubescence. The pronotum very coarsely punctured, except at the apex, the punctured part with long pale fulvous hair. The mesonotum with coarse, large, mostly confluent punctures; the sides inside the suture with eight large punctures, outside it impunctate, except a row of punctures close to the suture. The scutellum bordered with a furrow, and with some large punctures at the base and down the middle. Median segment irregularly shagreened and reticulated; there are four keels, the lateral ones converging distinctly towards the apex, the central ones irregular and converging at the apex; the sides of the apical part are irregularly reticulated. The propleuræ with the lower half, the metapleuræ with the apical half striolate; the mesopleuræ not very strongly punctured; the breast sparsely covered with long white hair. Abdomen strongly punctured throughout; the basal segment has an oblique slope, and at the top is a keel which projects in the middle, the part in front of it being crenulated; the suture on the second segment is wide and deep; the third and following segments are white at the apex and fringed with golden-fulvous hair; the pygidium is coarsely punctured, covered with golden hair, which is especially thick at the sides; the second ventral segment with the punctures larger and more widely separated than the others. The tibiæ and tarsi are densely covered with silvery hair; the metatarsus with longer hair than usual, and provided with three long spines, reddish at the apex; the calcaria, tarsal spines, and the front tarsi reddish. The second cubital cellule at the top and bottom shorter than the first, narrowed at the top; the first and second recurrent nervures received shortly beyond the middle of the cellule; the nervures fuscous; the stigma deep black.

This species agrees with *T. carinata* in having the basal abdominal segment keeled; but it is a larger insect, with the punctuation very much stronger; the apex of the front tarsal spur not cleft and longer; the fore tarsi red; the hind spurs reddish (not black); the metatarsus with only four (not five) spines; the median segment with four keels, and more strongly reticulated; and the abdomen shorter (compared to the thorax), much more strongly punctured, with the segments white at the apex.

MYZINE.

Myzine, Latreille, Hist. Nat. des Crust. et Ins. xiii. p. 269 (1805); Gen. Crust. et Ins. iv. p. 112.
Plesia, Jurine, Nouv. Méthode de class. les Hymén. p. 150 (1807).

This is a genus of small extent, but of world-wide distribution. The species are not always easy to identify, on account of their great similarity and from their coloration and markings showing great variability. The males, again, from their differing so much from the females, are not, without direct observation, readily allocated to their proper partners of the other sex.

In all the females of the species from our region the pro- and metapleuræ are obliquely striated, so I have not mentioned this in describing them.

i. *Body marked with yellow.* (Species 1–14.)

a. *Legs reddish or yellow.* (Species 1–4.)

1. **Myzine agilis.**

Myzine agilis, Smith, Descr. of New Species of Hymen. p. 182 (♀ ♂)[1].

Hab. NICARAGUA [1].

This species may be known from all I have described or enumerated, except *M. fulviceps*, *M. pulchriceps*, and *M. sexcincta*, by having the legs ferruginous; but it differs from *M. fulviceps* in having the head black, with yellow markings.

2. **Myzine fulviceps.** (Tab. XII. fig. 20.)

Nigra, capite fulvo, nigro- et flavo-maculato, tibiis tarsisque ferrugineis, abdomine flavo-balteato; alis flavo-hyalinis. ♀.
Long. 20 millim.

Hab. MEXICO, Acapulco, Tierra Colorada, and Chilpancingo in Guerrero (*H. H. Smith*); GUATEMALA, San Gerónimo (*Champion*).

Head yellow, more or less tinged with ferruginous on the vertex, densely covered with pale fulvous hair; a large black mark on the vertex, strongly punctured; the ocelli in pits; the clypeus bluntly carinate; the mandibles ferruginous, black at the apex, and at the base bearing long fulvous hair. Antennæ with the first and second joints yellow; the scape covered with long pale hair; the flagellum dull ferruginous, covered with a pale microscopic pile, the third joint shorter than the fourth. The thorax has the pleuræ and breast black; the pronotum has the apical half yellow, the basal half black; the mesonotum is black, yellow in the centre and along the tegulæ; the scutellum and postscutellum are yellow; the median segment is black, the sides, a wedge-shaped mark at the base in the middle, and a small mark in the centre at the apex yellow. The yellow part of the pronotum is thickly covered with long fulvous hair; the hair on the mesonotum is much sparser; the median segment without hair, but covered with a white down; the mesopleuræ and breast are covered with long white hair, the former having a large yellow mark. The apical half of the pronotum is densely punctured, the black basal part depressed towards the head; its base rather strongly punctured, the apex impunctate. The base of the mesonotum is finely and closely punctured; the sides smooth and with a few large punctures; the central part with some large punctures, the spaces between them being finely and closely punctured; the scutellum coarsely punctured; the postscutellum with a few large punctures; the median segment impunctate, in the middle with a few transverse striations, its apex oblique. The propleuræ are finely and closely striated; the metapleuræ are obliquely striated, with the striations more widely apart than they are on the propleuræ; the mesopleuræ coarsely punctured. Legs: the coxæ, the trochanters, and the base of the

four anterior femora black, the hinder coxæ marked with yellow; the femora yellow, suffused with rufous; the tibiæ and tarsi rufous. The hair on the legs long and white; the calcaria white; the hind femora shining and impunctate. The abdomen above shining, the black with bluish reflections; there is on the basal segment a broad yellow band; on the second segment are two large yellow marks, and on the third and fourth a broad yellow band incised in the middle at the apex; the fifth segment has an unbroken yellow band; the pygidium is yellow, rufous at the apex, and strongly longitudinally striated; on the ventral surface there are two yellow marks on the first, second, and third segments, the marks becoming successively smaller; the segments above and beneath are punctured, but not strongly; the apical ventral segment is smooth, impunctate, except at the apex, which bears some large punctures; the ventral surface and the sides are sparsely covered with long white hair. Wings yellowish-hyaline, a broad fuscous band along the apex; the costa and stigma ferruginous, the nervures pale testaceous.

A variety from Guatemala has the black marks on the head prolonged—at first narrowly, then expanding behind, this part being united to the eyes by a short black line, which is widest at the eyes; the yellow part of the pronotum with a small black mark in the centre; the mesopleuræ with two yellow marks; the median segment with a four-angled mark at the base, a smaller elongated line at the apex, and the sides broadly, yellow, this yellow being continued at the apex to the metapleuræ; the hind femora broadly black at the base; the pygidium yellow, except at the apex, which is ferruginous; and the wings darker coloured.

A specimen from Chilpancingo, Mexico, is much darker coloured: the black on the vertex extends to the antennal plates; the vertex is ferruginous (but this may be caused by discoloration); the pleuræ have only a small mark below the tegulæ; the apical part of the pronotum is only yellow at the sides and at the apex; the yellow marks on the mesonotum are smaller; the scutellum is entirely black, except a small yellow mark; on the median segment there are only two short lines at the sides; the femora are black, being only yellowish at the apex; and the hypopygium is black, rufous round the apex. In this variety the punctuation is much stronger; the wings are as in the type.

These three forms are tolerably constant in coloration, although each shows some variation; but as I can find no structural differences between them, I prefer to treat all three as forms of one species. The coloration of the abdomen is constant in each.

3. **Myzine pulchriceps.** (Tab. XII. figg. 21, ♂; 22, ♀.)

Nigra, læte flavo-maculata, femoribus flavis, tibiis tarsisque ferrugineis; alis fulvo-hyalinis.
Long. 11 millim.

Hab. MEXICO, Tierra Colorada, Rio Papagaio, and Venta de Zopilote, all in Guerrero (*H. H. Smith*), San Blas in Jalisco (*Schumann*).

Head thickly clothed with fuscous hairs, above the antennæ strongly punctured; the clypeus bluntly carinate, much less strongly and more closely punctured than the vertex; the ocelli in a large pit, with an impunctate space behind it; there is a short furrow above the antennæ. The mandibles are yellow, the apex black and ferruginous, the hair long and fulvous. The head is yellow, the vertex black, the black at the apex in the middle incised and with a yellow line from the ocelli; the black behind becomes narrowed, and then runs round the posterior region to become united to the eyes. The pronotum is strongly punctured; the mesonotum is finely and closely punctured, except at the base; the scutellum with large widely separated punctures; the median segment at the base closely and finely punctured. The pronotum is yellow, with a semicircular irregular black mark at the base, and a transverse black band across the centre, the yellow and also the black band extending down the propleuræ. The mesonotum has a yellow mark in the centre, indented at the base; the sides are yellow; the postscutellum and scutellum, a mark (narrowed towards the apex) at the base in the middle of the median segment and a large mark (extending to the propleuræ) at the sides, and a large mark on the mesopleuræ produced downwards at the base and apex (much more so at the apex than at the base) all bright yellow. Abdomen yellow above; a mark at the base and a transverse line on the other segments black; the pygidium yellow at the base, the middle fiery-golden, with a semicircular dark line in front; the ventral surface black, with two large marks on the basal segment and two smaller ones on the second.

The male has the head black, rather strongly punctured, but less strongly on the vertex; densely covered with fulvous hair; the mandibles, labrum, and clypeus, the orbits of the eyes to the top of the incision, and two spots over the antennæ bright yellow. The antennæ with the scape beneath yellow; the flagellum covered with a pale pile; the apex rufous. The pronotum closely punctured, yellow; the extreme base and a large incised mark on the sides black. The mesonotum more strongly punctured all over; a large mark in the centre and two small marks at the tegulæ, the greater part of the pleuræ, the scutellum, and postscutellum, yellow. The median segment closely punctured, for the greater part yellow; on each side at the base is a large black mark, with three roundish incisions at the apex and a small yellow mark on the outside at the base; at the apex in the middle is a black bifurcated mark; the base of the metapleuræ is black. The basal segment of the abdomen is black at the base, the apex yellow, the black continued down the middle as a somewhat pear-shaped mark; the other segments broadly yellow at the apex, the black on the second segment, and, to a less extent, on the third, produced in the centre; the apical segment black, with a yellow mark in the middle; the second and following ventral segments yellow. Legs bright yellow, the hinder coxæ, trochanters, and base of the femora black, the coxæ marked with yellow beneath. Wings clear hyaline, the extreme apex infuscated, the stigma testaceous; the first recurrent nervure received a little beyond the middle of the cellule, the second close to the middle of the second transverse cubital.

In size the males vary from 9 to 14 millim., and they vary also in coloration. The femora may be entirely black. The coloration of the median segment shows considerable variation: it may be as in the type, but with the black apical mark larger and entire, or it may be black, with two or three yellow marks; the mesopleuræ may be black, with one or two yellow marks; and the metapleuræ may be entirely black. The markings on the basal abdominal segment also vary: the projecting part of the black may be oval, square, or conical, without a neck at its base; the projection varies in length, and may disappear entirely. The yellow on the mesonotum may become obsolete, and the apical segment of the abdomen may have two yellow marks instead of one, as is more generally the case.

4. **Myzine sexcincta.**

Scolia sexcincta, Fabr. Syst. Ent. p. 356[1]; Ent. Syst. ii. p. 236[2].
Elis sexcincta, Fabr. Syst. Piez. p. 248[3].
Myzine sexcincta, Latr. Gen. Crust. et Ins. iv. p. 112[4]; Smith, Cat. Hymen. Ins. iii. p. 78[5]; Cresson, Trans. Am. Ent. Soc. iv. p. 200[6].
Plesia sexcincta, Lepel. de St.-Fargeau, Hist. Nat. Ins. Hymén. iii. p. 584[7].
Tiphia maculata, Fabr. Syst. Piez. p. 233[8].
Plesia maculata, Guérin, Revue Zool. 1838, p. 58[9].
Tiphia namea, Fabr. Syst. Piez. p. 233[10].
Plesia namea, Lepel. de St.-Fargeau, Hist. Nat. Ins. Hymén. ii. p. 577[11].
Meria collaris, Say, Bost. Journ. Nat. Hist. i. p. 362[12]; Complete Writings, ii. p. 748[13].
Myzine subulatus, var., Say, Bost. Journ. Nat. Hist. i. p. 301[14]; Complete Writings, ii. p. 743[15].

Hab. North America[5], Carolina[7 9 10 11], Georgia[8], Indiana[12], ?Texas[6].—Mexico[14].—Antilles[2 3].

This species has been recorded from Carolina and Georgia by Fabricius and by Cresson from Texas; but Cresson, in his "Catalogue of North-American Hymenoptera" (Trans. Am. Ent. Soc. 1887, Supplement, p. 268, nota) remarks that *M. sexcincta* probably "does not really occur in our [*i. e.* Nearctic] fauna, but is confined to the West-Indian Islands, from whence the type was described."

The Mexican record is from Say[14], who states that a variety inhabits Mexico in which the abdominal bands are less abruptly emarginate on each side.

I have not seen a specimen of *M. sexcincta* from within our limits.

b. *Legs black.* (Species 5–14.)

* *Wings violaceous.* (Species 5.)

5. **Myzine sexmaculata.** (Tab. XII. fig. 19.)

Plesia sexmaculata, Guérin, Revue Zool. 1838, p. 57[1].

Nigra, postscutello maculisque sex abdominis flavis; alis fuliginosis. ♀.
Long. 22 millim.

Hab. MEXICO [1] (*Sallé*), Amula in Guerrero 6000 feet (*H. H. Smith*), North Yucatan (*Gaumer*); GUATEMALA, El Tumbador (*Champion*).

Head rather shining, strongly punctured, more sparsely on the vertex; thinly covered with long pale hair; clypeus sharply carinate in the middle; the mandibles black, fringed with long fulvous hair. The scape of the antennæ deep black, sparsely covered with long fulvous hair; the flagellum paler coloured, owing to its being thickly covered with a pale fuscous pile. The pronotum strongly punctured, the punctures distinctly separated, the centre finely and closely punctured, the oblique basal part impunctate; the mesonotum with fewer and more widely separated punctures than the pronotum, the sides impunctate; the scutellum punctured like the mesonotum; the median segment opaque, the apex rather strongly transversely striolate and oblique. The hair on the thorax is long and white. The abdomen has bluish reflections; the yellow marks are on the first, second, and third segments; the penultimate segment has scattered punctures and is sparsely covered with white hair; the pygidium is longitudinally striolated, and is thickly covered with long pale soft hair; the ventral segments are punctured and bear long white hair at the apex. The legs bear long white hair; the calcaria are white; the tarsi have the spines rufous.

Our specimens may not really belong to *M. sexmaculata* (Guér.), which has no yellow on the thorax; but otherwise they agree with Guérin's description. In one or two examples there are eight marks on the abdomen.

The punctuation of the mesonotum varies in strength. The example from Guatemala has a yellow mark below the hind wings.

** *Wings hyaline, suffused along the costa.* (Species 6–13.)

Abdomen with spots only. (Species 6–8.)

6. **Myzine toluca.**

Nigra, maculis abdominis 8 flavis, postscutello flavo; alis fusco-hyalinis, antice fumatis. ♀.
Long. 15 millim.

Hab. MEXICO, Presidio de Mazatlan (*Forrer*).

Head below the ocelli coarsely, above them sparsely, punctured; the clypeus not so strongly punctured as the front; the mandibles reddish towards the middle, their hair golden-fulvous. The scape of the antennæ shining, bearing a few punctures and some long pale hairs. The pronotum closely and not very strongly punctured throughout. The mesonotum to the furrows very finely and closely punctured; the other part with a few not very large punctures. The scutellum with scattered punctures, except down the middle. The median segment opaque, the centre rough and closely punctured. The breast and pleuræ covered with long white hair; the pronotum densely covered with shorter fuscous hair; the mesonotum almost glabrous; the median segment with

a pale pubescence. Abdomen shining, with distinct bluish reflections; the first segment at the base, and the sides and the apices of the ventral segments, densely covered with long white hair; the third, fourth, and fifth segments above sparsely, shortly haired; the pygidium longitudinally striolate, glabrous, the apex reddish. Legs densely covered with long white hairs; the tarsal spines white; the apices of the tarsal joints and the tibial spines reddish. The wings hyaline in front, suffused from the basal nervure to the apex. A short line on the inner side of the eyes at the top, two marks on the pronotum in front, two small marks on the mesonotum behind, the postscutellum, a mark on the sides of the first to the fourth abdominal segments above, and one on the sides of the first and second ventral segments, yellow.

7. **Myzine centralis.**

Long. 18 miilim.

Hab. COSTA RICA, Caché, Volcan de Irazu 6000 to 7000 feet (*Rogers*).

Agrees with *M. toluca* in having eight yellow spots on the abdomen, but they are very much larger, and the two on the basal segment are almost united; there is no yellow on the pronotum or median segment; there is a yellow mark below the tegulæ; the postscutellum is yellow; and there is a narrow yellow line on the inner orbits of the eyes. Head with large, deep punctures, closely pressed together above the antennæ, widely scattered on the vertex; the front ocellus in a pit, and there is an impunctate space in front of it; there is a furrow down the front; clypeus finely rugose, with some punctures, the apex fringed with pale hair. Antennæ with the scape of the flagellum with large punctures, and bearing long pale fulvous hair; the flagellum covered with fuscous pubescence. Pronotum coarsely punctured throughout; the base of the meso notum is impunctate, then follow a belt of minute and another of large punctures; scutellum with large punctures on the sides, the middle impunctate; median segment alutaceous, the sides with pale down; mesopleuræ punctured and covered with long white hair. Abdomen shining; the fourth and fifth segments slightly punctured; the pygidium rugose, not very thickly covered with long pale hair; the sides of the abdomen and the ventral surface also covered with long pale hair. The legs bearing long white hair; the calcaria white, the tarsal spines reddish; the metatarsus beneath fringed with fulvous pubescence. Wings subhyaline, the apex broadly fuscous.

The example from the Volcan de Irazu has on the pronotum two marks in front and an uninterrupted band behind yellow.

8. **Myzine parvimaculata.**

Nigra, maculis abdominis 2 flavis; alis fusco-violaceis.
Long. 18 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Head below the ocelli strongly, above them very sparsely, punctured; a transverse

furrow joins the hinder ocelli; clypeus bluntly carinate, finely rugose, and with some scattered punctures; mandibles obscure ferruginous along the furrow, the hair long and fulvous. The scape of the antennæ with some large punctures, and a few long golden hairs at the apex; the flagellum with pale down. The pro- and mesothorax thickly covered with silvery hair. The pronotum closely and strongly punctured, the base very finely and closely, the extreme base still more closely punctured and covered with a silvery pile. The mesonotum in the centre with very few punctures, except at the apex; the space bounded by the furrows with some large punctures; the sides impunctate. The scutellum is impunctate down the centre, the other parts bearing large, distinctly separated punctures. The median segment is finely and closely punctured at the base; the apex indistinctly striolate. Abdomen with the basal segment finely punctured, the second segment more strongly punctured all over, the third, fourth, and fifth segments impunctate at the base, the rest closely and finely punctured; the pygidium longitudinally striolated, sparsely haired, the apex fiery-red; the ventral segments very shining, the apices with some punctures and some long pale hairs. The legs densely covered with silvery hair; the tarsal spines on the anterior legs ferruginous; the calcaria white; there is a large yellow mark on the hind coxæ behind.

Abdomen with spots and bands. (Species 9–13.)

9. **Myzine pulchrina.** (Tab. XII. fig. 18.)

Nigra, capite et thorace læte flavo-maculatis, abdomine balteis 8 flavis; alis fere hyalinis, antice fumatis.
Long. 12 millim.

Hab. Panama, David in Chiriqui (*Champion*).

Head black, shining, moderately strongly punctured, covered with not very long pale hair, which is longer on the clypeus; a mark on either side of the clypeus, two marks over the antennæ, a line on the inner and outer orbits of the eyes (the outer line extending beyond the eyes, and becoming joined to a curved line at the top of the vertex), clear yellow. The scape of the antennæ is white at the apex above; the flagellum is brownish beneath, and bears a pale microscopic pile. The pro- and mesothorax covered with long white hair; the pronotum strongly punctured; the centre of the mesonotum with very few punctures, the part limited by the furrows strongly punctured, except at the base, which is opaque and very finely punctured, the sides impunctate; the scutellum strongly punctured; the median segment finely punctured at the base, the apex impunctate, indistinctly striated. There are two large yellow marks in front of the pronotum, and a narrower smaller transverse one behind; the central part of the mesonotum and two lateral marks, a mark on the scutellum, the postscutellum, the lateral margins of the median segment, a large mark below the tegulæ, a smaller mark at the apex of the mesopleuræ, and a still smaller one on the metapleuræ, bright yellow. Abdomen shining, the black with bluish reflections;

finely punctured; the pygidium longitudinally striolate, almost glabrous, the apex fiery-red; a band on the first segment, incised at the base and apex, two large marks on the second, and continuous bands on the third, fourth, and fifth segments, bright yellow; beneath there are two pale yellow spots on the second and two lines on the third and fourth segments; the ventral segments at the apex bear long white hair. The wings are hyaline, with the margin infuscated from the basal nervure to the apex of the radial cellule, and the nervures pale testaceous. The legs have a yellow line on the fore tibiæ, and the four anterior femora at the base behind are yellow; they are covered with long silvery hair; the calcaria are white; the fore tarsi and also the spines on the femora, are ferruginous.

We have also received a specimen of a larger form from Paraiso, Guatemala (*Champion*) (14 millim.). It has the scape of the antennæ entirely black; on either side of the clypeus is a yellow mark, separated from the yellow orbital line; there is a broad yellow mark over the antennæ; on the vertex behind the eyes is an elongated line, the centre being without yellow; there are only two somewhat triangular marks on the pronotum; the mark on the scutellum is much larger, and there is a small mark on the sides at the base; there is a somewhat triangular mark on the base of the median segment, besides the two large lateral marks; there is only one yellow mark on the pleuræ; the marks on the abdomen are much as in the type, but there is no line on the fifth segment; there is a yellow mark on the hind coxæ and femora.

An example from Peña Blanca, Panama, has only a small yellow mark on the centre of the vertex, and only one mark on the mesopleuræ.

A specimen from Capetillo has only the inner orbits of the eye yellow and no mark on the scutellum; two small yellow marks on the pronotum, and only one mark on the median segment, the pleuræ being entirely black; only one yellow mark on the mesopleuræ and none on the coxæ, the front legs being also devoid of yellow; the second abdominal segment wants the yellow, and the yellow on the fourth and fifth segments is interrupted in the middle.

10. **Myzine montivaga.** (Tab. XII. fig. 15.)

Nigra, abdomine linea maculisque duabus flavis, orbitis oculorum flavis; alis fusco-hyalinis, antice fumatis. ♀. Long. 19 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Head closely and strongly punctured, the punctures on the vertex more widely separated; densely covered with long grey hair; the inner orbits of the eyes yellow; the mandibles slightly ferruginous before the apex. The scape of the antennæ shining, bearing large punctures, and beneath with long white hair; the flagellum covered with a pale pile, the third and fourth joints subequal. The prothorax covered with long grey hair, closely and finely punctured; the mesonotum more strongly and not so closely punctured; the mesopleuræ more coarsely punctured; the median segment opaque,

laterally covered with a white pile, the centre roughened. Abdomen closely and finely punctured above, thickly covered with fuscous pubescence; the first segment at the base and the sides and the apices of the ventral segments bearing long white hair; the pygidium longitudinally striolate and sparsely covered with long white hairs. The legs densely covered with white hair; the tarsal spines reddish, and there is a row of reddish spines on the inner margin of the hinder tibiæ; the calcaria white. The wings subhyaline, fuscous along the margin from the basal nervure to the apex. The postscutellum, a spot under the tegulæ, two spots on the basal segment of the abdomen, and the base of the third segment also, yellow.

11. **Myzine ornaticeps.** (Tab. XII. fig. 24.)

Nigra, abdomine linea maculisque duabus flavis; alis fusco-hyalinis, antice fumatis. ♀.
Long. 19 millim.

Hab. Mexico, Acapulco and Rincon in Guerrero (*H. H. Smith*), Guadalajara in Jalisco (*Höge*), North Yucatan (*Gaumer*).

Head very strongly punctured, except behind the ocelli, densely covered with long fulvous hair; the ocelli in a pit, and behind them is a short transverse channel; the inner orbits of the eyes bright yellow; the mandibles with the basal half ferruginous. The scape of the antennæ shining, and bearing a few large punctures; the flagellum covered with a pale pile, the apex red, the third and fourth joints subequal. The prothorax very strongly punctured, behind finely and closely punctured, with some larger punctures intermixed; the mesonotum with the base finely punctured, the sides impunctate, the other part with large scattered punctures, this being also the case with the scutellum. The median segment opaque, a little roughened in the middle; densely covered with a pale pile. The pro- and mesonotum densely covered with fulvous pubescence; the pleuræ with long white hair. Two marks on the front of the pronotum, an incised mark on the mesonotum and one on either side close to the tegulæ (which are yellow), the postscutellum, a short curved mark on either side of the median segment, and a mark below the tegulæ, yellow. The abdomen shining, the black with bluish reflections; the third, fourth, and fifth segments with scattered punctures; the pygidium longitudinally striolate and with some long pale hair, the apex reddish; the basal segment densely covered with long pale hair; the second and third segments, and the apex of the first, almost without hair; the other segments above sparsely covered with short fuscous hair; the sides and the ventral surface with long white hair on the apical half of the segments; there are two irregular marks on the sides of the first and second abdominal segments, and a continuous line on the third and fourth segments, yellow. The legs covered with long, glistening white hair; the tarsal spines rufous; the calcaria white; the tibial spines reddish. The wings subhyaline, suffused with fuscous along the margin from the basal nervure to the apex.

An example from Venta de Zopilote in Guerrero (*H. H. Smith*) wants the yellow marks on the pronotum and median segment, and it has the marks on the mesonotum much smaller. It is also smaller, being only 15 millim. in length. The second abdominal band may become obliterated.

12. **Myzine fallax.**

Myzine fallax, Smith, Descr. of New Species of Hymen. p. 183[1].

Hab. Mexico[1].

13. **Myzine analis.**

Plesia analis, Guérin, Revue Zool. 1838, p. 58[1].

Hab. Mexico[1].

*** *Wings hyaline.* (Species 14.)

14. **Myzine smithiana.**

Long. 17 millim. ♂.

Hab. Mexico, Amula 6000 feet, Chilpancingo 4600 feet, Rincon 2000 feet, Tierra Colorada 2000 feet, all in Guerrero (*H. H. Smith*), North Yucatan (*Gaumer*).

Head closely and strongly punctured, densely covered with long dull fulvous hair; the ocelli in pits; a broad and deep longitudinal furrow over the antennæ; the inner orbits of the eyes and the clypeus yellow; the mandibles yellow, the apices ferruginous; the labrum brownish; the apex of the clypeus almost transverse. Antennæ stout; the apex reddish. The pro- and mesonotum moderately strongly, the pleuræ still more strongly, punctured. In front of the pronotum are two yellow marks, and the apex is edged with yellow; there is a curved yellow mark below the tegulæ, and a smaller one lower down below the hind wings; there is a yellow mark on the apex of the mesonotum, one across the scutellum, and one on the postscutellum; the inner furrows on the mesonotum are wide and deep. The median segment is very closely and rather strongly punctured, except a smooth, impunctate, glabrous space at the sides, beneath which is a curved yellow line. The mesonotum is sparsely covered with short dull fulvous hair, the median segment more thickly with longer hair of the same colour; the hair on the pleuræ is paler. Abdomen shining, sparsely pilose; the black ground-colour with blue and violet reflections; all the segments, except the last, banded at the apex with yellow, the yellow at the sides turning backwards on the ventral surface; close to the yellow dorsal bands are yellow marks; the segments above and beneath are sparsely punctured. Legs black; the four anterior tibiæ in front and the fore tarsi yellow; a mark on the hind coxæ, and one on the apex of the hind femora beneath, yellow; the femora bearing on the lower side long white hair, above densely covered with silvery pubescence; the tarsi are also covered with a dense pubescence, their spines pale fulvous; the calcaria are pale. Wings clear hyaline, the apex infuscated; the second

and third cubital cellules are subequal, both being narrowed towards the top; the third transverse cubital cellule is curved; the first recurrent nervure is received in the apical third of the cellule, the second close to the base of the cellule.

We have also received specimens of a form with the four front femora broadly in front, and the tibiæ and tarsi entirely, yellow, the hind tibiæ yellow in front, for the greater part black behind, and the hind tarsi entirely yellow. The tegulæ may be fuscous or yellow, and the scape of the antennæ is sometimes yellow beneath.

This insect is common, and it, no doubt, is the male of one of the species I have described, but I cannot say which.

ii. *Body entirely black.* (Species 15.)

15. **Myzine melanocephala.**

Nigra; alis hyalinis. ♂.
Long. 10 millim.

Hab. MEXICO, Frontera in Tabasco (*H. H. Smith*).

Head black, except three yellow marks on the clypeus and the base of the mandibles, and two small marks over the antennæ; the clypeus covered with pale fulvous hair, rugosely punctured; the front and vertex clothed with long fuscous hair, rather strongly punctured, the punctures distinctly separated; the tips of the mandibles rufous. The pro- and mesonotum shining, the former with some minute punctures; the mesonotum with the punctures larger and more widely separated, its centre raised and bordered by a furrow, the raised part becoming narrowed towards the scutellum; the middle of the median segment coarsely, rugosely punctured, the apex semioblique, roughly irregularly coriaceous in the centre, and with a blunt tooth at the sides, and another curving upwards in the centre at the apex. The mesopleuræ strongly punctured, the punctures distinctly separated; the metapleuræ finely and closely punctured. Two small marks in front of the pronotum and a line round its apex, a small incised mark near the centre of the mesonotum, one on the postscutellum, and one under the tegulæ, yellow. The abdomen black, with a violaceous hue, with fine scattered punctures; the segments at the apex narrowly lined with yellow. Wings hyaline; the first cubital cellule a little narrowed at the top—at the top equal in length to, at the bottom longer than, the third; the first and second transverse cubital nervures straight, oblique, the third curved; the first recurrent nervure is received beyond the middle, the second close to the base of the cellule.

iii. *Abdomen ferruginous.* (Species 16.)

16. **Myzine rufiventris.** (Tab. XII. fig. 23.)

Myzine rufiventris, Cresson, Trans. Am. Ent. Soc. iv. p. 201[1].

Hab. NORTH AMERICA, Texas[1].—MEXICO, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Cresson [1] describes the wings as "dark fuscous, paler at apex"; but in the Mexican example I refer to his species they are not paler at the apex, but decidedly paler at the base in front of the basal nervure. This specimen has the head and thorax covered densely with long white hair; the pronotum finely and closely, the mesonotum much more strongly, punctured, the punctures on the latter more widely separated, the extreme base of the mesonotum being impunctate; the scutellum punctured like the mesonotum; the median segment coarsely and irregularly reticulated; the abdomen sparsely covered with long white hair; the legs densely covered with white glistening hair; the second recurrent nervure received quite close to the base of the cellule.

Fam. MUTILLIDÆ.

This well-marked family, one of the most extensive of the Aculeata, is well represented in our region. Its chief peculiarity is that the females are apterous and the males winged. This fact, coupled with great differences in other respects, in the absence of direct observation makes the uniting of the sexes a work of very great uncertainty, and, in truth, I do not see how it is to be accomplished from the mere comparison of cabinet specimens. In *Mutilla* proper I have only been able to unite the sexes to my satisfaction in one instance, and this I have done on the direct observation of Mr. H. H. Smith, who has noted the male and female of *Mutilla cyllene*. The difficulty is further increased by the males (and this is true of *Mutilla* and *Sphærophthalma*, and of the former, at least, in most parts of the world) having a certain type of coloration in common, namely, black bodies and legs, with a ferruginous abdomen and fuscous or blackish wings, and with, on the whole, a general agreement in punctuation and clothing of the body. This general resemblance of the males not only makes their specific determination a work of difficulty, but it adds greatly to the task of assigning to them their respective partners of the opposite sex; it is, in fact, impossible to do this in many cases in default of direct observation on the living insects, and I have therefore had to describe most of the males as distinct species, although I feel satisfied that they are connected with females that I or other Hymenopterists have already described under different names. The males, as species, are not difficult to separate, even if they do agree closely in clothing and coloration, by the keels &c. of the pygidium and hypopygium, for I find that in these parts each species shows distinctive peculiarities. Unfortunately, hardly any of the authors who have described American Mutillidæ make any mention of this most important structural feature. The form and structure of the internal genital armature is another prime factor in specific definition; but, of course, it is not of such easy application as the form of the terminal abdominal segment.

As regards the males (and the same remark might almost equally well be applied to the females) the following points should be noted in specific descriptions:—The form, clothing, and sculpture of the scape, and the relative lengths of the third and

fourth joints of the antennæ; the form of the clypeus; the manner in which the head is developed or narrowed behind the eyes, and also its width compared to the thorax; the shape of the apex of the pronotum and of the median segment, and also of the median area; the form of the basal ventral segment of the abdomen, more particularly of the central keel. As regards the form of the keel, it has been used by Sichel and Radoszkovsky, in their "Essai d'une Monographie des Mutilles de l'ancien Continent" (Horæ Soc. Ent. Ross. vi. pp. 139 *et seq.*) to classify the males.

I have only been able to find one record elucidating the natural history of the American Mutillidæ. Blake, in his Monograph (Trans. Am. Ent. Soc. 1886, p. 179), simply says that they "are now well known to be parasitic, especially on various species of *Bombus*"; and Cresson (Trans. Am. Ent. Soc. 1887, Suppl. p. 108) in practically reproducing this statement very properly points out that they must have some other hosts than humble-bees, inasmuch as they are found in abundance where no *Bombi* are known to occur.

That they are parasitic and solitary in their habits may be taken for granted, as also their love for hot sandy localities. The instance alluded to above as regards the habits of one of the American species is given by Westwood (Introduction to the Modern Classification of Insects, ii. p. 214), who remarks that "from information given by Mr. MacLeay to Mr. Kirby, it appears that a large North-American species (*Mutilla coccinea* * = ? *occidentalis*, Linn.) is very active, taking flies by surprise, probably for the purpose of storing its cells. Its sting is so powerful that a person stung by one lost his senses in five minutes, and was subsequently so ill that his life was despaired of."

That they must have other hosts than *Bombi* seems quite clear from the records, scanty as they are, of the habits of European species. One most accurate observer, Giraud (Verh. zool.-bot. Ges. Wien, 1863, p. 1307), relates how he found four cocoons identical in every respect, from which he bred two *Ammophila heydenii*, Dahlb., and one *Mutilla differens*, Lep., the deduction being apparently conclusive that the *Mutilla* is a parasite of the *Ammophila*. Sichel (*cf.* Horæ Soc. Ent. Ross. vi. p. 11) concludes from his observations that *Mutilla incompleta*, Lep., is in all probability a parasite of a small species of *Halictus* (a solitary bee), and the same observer (*op. cit.* p. 12) believes that *Mutilla coronata* preys on *Larra anathema*.

The classification of the Mutillidæ is a work of extreme difficulty, and in view of the very large number of species ranged under *Mutilla* (between 900 and 1000) it would be much more convenient if the genus could be satisfactorily split up. It seems, however, almost impossible to do this in anything like a natural manner, even with the females, while so few of the males being allocated to their respective females further increases the task. Moreover, what might be a satisfactory system of arrangement for

* This name is not to be found in Smith's British Museum Catalogue, nor in Blake's Lists.

Palæarctic and Oriental Mutillidæ might not apply to the Neotropical forms. The males could be separated by the number of the cubital cellules, which range from one to four, but this will not aid us with the females. In my opinion *Sphœrophthalma*, Blake, should be accepted as distinct from *Mutilla*—the circular, convex, shining eyes alone serving to separate it from *Mutilla*, the eyes in the latter being oval, larger, and duller. *Sphœrophthalma* and *Mutilla* are divisible, in both sexes, into two well-marked groups by the form of the basal abdominal segment: in the one case it forms a distinct peduncle, quite distinct from the second segment, to which at the apex it is not equal in width; while in the other section the first segment becomes gradually wider to the apex, and is equal in width to the base of the second and continuous with it. These differences are so apparent that they might be used as marks of generic distinction; in fact, they have been so used by Radoszkovsky (Horæ Soc. Ent. Ross. xix. p. 32), who reserves the name *Sphœrophthalma*, Blake, for the division with the "abdomen petiolé, premier segment ne plaquant par le suivant," the males having three cubital cellules; and for the section with the "abdomen subsessile, premier segment plaqué avec le second," he creates a new genus *Edrionotus*, the males of which are said to have only two cubital cellules. For another group with round eyes he has proposed (*op. cit.* p. 35) the genus *Tricholabiodes*, this having the "corps allongé, premier segment abdominal long, subpedonculé, ne plaquant pas le suivant, tête transversale, yeux ronds"; the wings with three cubital cellules. Only males are known.

It is worthy of remark that, so far as we know, all the males of the first division of *Mutilla*—that with the basal abdominal segment gradually dilated to the apex—have the abdomen entirely or for the greater part ferruginous, all the segments, too, being densely fringed with fiery-ferruginous hair; the petiolated section, on the other hand, having the abdomen, except in a few species, black, with white hair. In the first division also the system of keels, spines, &c. on the apical abdominal segment is much better developed. This fact, among others, inclines me to the view that the two sections ought to be separated generically, but I am reluctant to make this division without a comprehensive study of the species from other parts of the world.

As a matter of convenience, when only the males of a species are known, I have placed them together.

MUTILLA.

Mutilla, Linnæus, Syst. Nat. 12th edit. i. 2, p. 966 (1767).

This genus shows much less diversity in the form and structure of the head and thorax than does *Sphœrophthalma*; it has the body much less hairy, and the number of species, at least in the Neotropical region, is much fewer.

A. *The basal segment of the abdomen gradually dilated to the apex and continuous with the base of the second.* (Species 1–40.)

1. Females (the males known or not). (Species 1–20.)

i. *The thorax broadly incised in the middle.* (Species 1.)

1. **Mutilla arguta.** (Tab. XIII. fig. 2, ♀.)

Capite aureo-hirto; thorace ferrugineo, nigro-maculato; abdomine nigro, ferrugineo- et aureo-maculato. ♀. Long. 3·5 millim.

Hab. Panama, Bugaba (*Champion*).

Head wider than the thorax, closely, rugosely punctured; the vertex sparsely covered with fuscous hair, the lower part with longer white hairs; the front also with a pale golden pubescence; the vertex irregularly suffused with fuscous patches. The eyes large, projecting, not reaching to the top of the head; the head well developed behind them and not much narrowed. The scape of the antennæ bears a short silvery pubescence, and the flagellum a pale microscopic pile; the third joint is a little longer than the fourth. The thorax broadest in front, narrowest towards the apex, the middle contracted broadly; the prothorax with a distinct neck at the base, the apical part rounded in front; at the base of the contracted middle part of the mesothorax are two stout teeth; the middle is rough, but without distinct teeth; along the edge of the median segment at the base are four sharp teeth of moderate length and a fifth shorter blunt one. The median segment has a rounded semioblique slope. The upper part of the thorax is finely and closely rugosely punctured, and covered with long fuscous hair. The mesopleuræ are excavated, shining, glabrous, very finely, longitudinally striated. Abdomen a little wider than the thorax, finely coriaceous; the base covered with long white hair; the middle and apical parts with the hair sparser and shorter; the four apical segments are also densely fringed with pale golden hair. The basal segment is gradually dilated to the apex. The second segment at the base is blackish, the black being cleft in two by a central ferruginous band, which is broad at the base, narrower at the apex; next comes a broad yellowish band, contracted in the middle; the apex is blackish suffused with ferruginous, the extreme apex in the middle with pale golden hair. The third segment at the base is transversely striated. The legs (including the femora) are covered with soft silvery hair.

A variety (?) from the Volcan de Chiriqui (*Champion*) differs from the above in coloration: the head behind and in the centre of the vertex is black; the flagellum of the antennæ is black; there is a broad black stripe down the middle of the thorax; the upper part of the mesopleuræ is more or less blackish; the basal part of the second abdominal segment is black, with a broad ferruginous band down the centre, the black being continued down the middle in a narrow band, dividing a broad irregular yellowish band in two, the apex also black and wanting the fringe of golden hair; the third

segment is black, the base transversely striated, the apex finely punctured and fringed with fulvous hair; the fourth segment is black at the base; the other segments are rufous, fringed with golden pubescence, and bearing long black hairs; the rest of the abdomen bears long fuscous hair, the hair on the base being fuscous, not white. The thorax has the appearance of being narrower and shorter, and the posterior spines are certainly longer and more curved.

Another example (also from Chiriqui) has the base of the second segment smooth, glabrous, and impunctate; the apex of the second segment reddish; the central yellow band (which has the yellow suffused with red) separated into two parts by a black line, narrow at the base, dilated in the middle; the fourth abdominal segment smooth, glabrous, and impunctate; the head broadly black in the middle in front; and the hinder tibiæ infuscated towards the apex.

ii. *The thorax not incised in the middle.* (Species 2–40.)

a. *Head and thorax red.* (Species 2–10.)

* *Abdomen reddish.* (Species 2.)

2. **Mutilla cyra.**

Ferruginea; capite supra aureo-velutino; abdomine maculis 8 aureis, segmento 2° fascia marginali aurea. ♀. Long. 10 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Head coarsely punctured, covered with silvery-white, and on the vertex with some longer black, hair. The eyes of moderate size, not reaching to the top of the head, which is hardly narrowed behind them. The clypeus indistinctly toothed at the sides. Mandibles black, with a reddish stripe at the base. The scape of the antennæ with depressed white hairs; the flagellum narrowed at the base, covered with a white pile; the third joint one half longer than the fourth; the three basal joints ferruginous, the others black. The thorax narrower than the head, coarsely punctured, except on the mesopleuræ. The pronotum with a distinct neck; the sides roundly narrowed from the apex to the base, the apex arcuate. The sides of the mesothorax very slightly concave, rugged. The median segment with a semioblique slope, more coarsely punctured than the mesonotum; the sides with some stout teeth. There is a thick patch of white pubescence on the sides of the pronotum; the mesonotum bears long black hairs, this being also the case with the median segment, but the hairs there are longer and blacker. The basal segment of the abdomen is short, becoming gradually wider towards the apex, where it is confluent with the second; in the centre it is shining and impunctate, punctured round the edges, and above bears a ring of white silvery hair. The second segment is coriaceous; the apex and sides are fringed with silvery-white pubescence; and there are two elongated maculæ at the base. There is

a squarish white mark on each side of the third, fourth, and fifth segments, the two on the last becoming confluent at the apex. The pygidium is fringed laterally with long, stout, dark fulvous hair. The second ventral segment is strongly, the other segments more finely and closely, punctured, and fringed with white hairs; the basal segment is covered with long white hair; the second segment is covered with silvery hair at the sides, and above there are some black hairs; the third to the fifth segments bear also black hairs, these segments, too, being infuscated in the middle. The legs are thickly covered with silvery-white hairs; the tibial spines stout, fiery-red, blackish at the apices; the calcaria pale fulvous; the tarsal spines fiery-red.

This species differs from the others of this section in having the abdomen ferruginous instead of black.

** *Abdomen black.* (Species 3–10.)

3. **Mutilla rufofemorata.** (Tab. XIII. fig. 1, ♀.)

Ferruginea; abdomine nigro, basi rufa, albo-maculata; antennis nigris; tibiis tarsisque fuscis. ♀.
Long. 15 millim.

Hab. Mexico, Amula in Guerrero 6000 feet (*H. H. Smith*).

Head, thorax, coxæ, trochanters, and femora red; the abdomen black, with the base of the first segment reddish, its apex, two broad lines on the base of the second segment, the apex of the latter broadly, a broad continuous line proceeding from it to the last segment, and also the edges of the ventral segments, silvery-white. The head not much wider than the thorax; above the antennæ coarsely punctured; the antennal plates shining, impunctate, the part between them coarsely punctured; on either side of them the head is smooth and impunctate, the division from the upper punctured part being indicated by an irregular keel. Clypeus finely punctured. Eyes rather small, oval, not reaching to the top of the head, being placed almost in the middle line; the head is hardly narrowed behind them. The mandibles are black, reddish in the middle. The scape of the antennæ is piceous towards the base, bearing a few hairs and some large punctures; the flagellum covered with a pale microscopic down, and tapering perceptibly towards the apex; the third joint twice the length of the fourth. Thorax quadrate, twice the length of the head; the base rounded and narrowed, the apex transverse, the sides contracted inwardly; the middle with a small, but distinct, incision; the sides roughly crenulated; on the sides of the median segment near the middle is a distinct tooth; coarsely punctured, and covered (as is also the head) with silvery hair; the mesopleuræ shining, impunctate, slightly hollowed. The abdomen broader than the thorax; the base (the reddish part) of the first segment oblique, shining, glabrous, and separated from the apical part, which is covered with black pubescence and white hair; the sides of the second segment coarsely punctured. The pygidium laterally covered with long fuscous hair. The tibiæ and tarsi thickly covered

with stiff white hairs; the tibial spine stout and black; the apical tarsal joints reddish at the apex.

4. **Mutilla mexicana.**

Ferruginea; abdomine nigro, fulvo-maculato; antennis nigris. ♀.
Long. 12 millim.

Hab. MEXICO, Oaxaca (*Höge*).

Head as wide as the thorax, coarsely punctured; the eyes small, placed slightly above the middle line, but still distant from the top, the head very slightly dilated behind them; the lower part of the cheeks bluntly bispinose; the clypeus toothed stoutly at the sides; the mandibles black, reddish at the apex. The scape of the antennæ thickly covered with long silvery hair, the flagellum with a whitish pile; the third joint twice the length of the fourth. The thorax elongate-quadrate; the base rounded, the apex truncated and with a semioblique slope, the sides very slightly curved inwardly; coarsely punctured; the mesopleuræ shining, glabrous, except for a slight whitish pile, and impunctate. The abdomen has the basal segment gradually dilated to the apex, and confluent with the second; its apex, two broad marks on the base of the second segment, the apex of the latter broadly, a broad mark on the sides of the third, fourth, and fifth segments, and the apices of the ventral segments also, silvery-white; the pygidium covered with dull fulvous hairs. The sides of the second dorsal segment strongly punctured, and more or less rufous, this being also the case with the second ventral segment. The femora sparsely, the tibiæ and tarsi thickly, covered with white hairs; the tibial spines black.

Similar in coloration to *M. rufofemorata*, except that the legs are entirely red, but easily distinguishable from that species by the base of the first abdominal segment not being testaceous, smooth, glabrous, and oblique; the thorax is also less concave laterally, and without an incision in the middle; the median segment is without a tooth on the side; and the hair on the head and thorax is longer, thicker, and black, not silvery-white.

5. **Mutilla belti.**

Ferruginea; abdomine nigro, albo-maculato; antennis nigris, scapo rufo. ♀.
Long. fere 10 millim.

Hab. NICARAGUA, Chontales (*Belt*).

Head a little wider than the thorax, coarsely punctured, the top bearing fuscous hair; above the antennæ and on the clypeus the hair is pale fulvous, behind the eyes it is shorter and silvery; mandibles reddish, above black. The eyes rather small, not reaching to the top of the head, which is not much narrowed behind them, and developed laterally a little beyond their width. The scape of the antennæ reddish,

the outer side smooth and glabrous, the inner side bearing long white hair; the second and third joints dull rufous, the second bearing long fulvous hairs, the other joints with a microscopic down; the third joint distinctly longer than the fourth. The thorax elongate-quadrate, the sides slightly narrowed, rough above, coarsely punctured, except the mesopleuræ, which are smooth and shining; the apex of the pronotum rounded; the median segment at the apex almost transverse, and with a steep semi-oblique slope. The thorax above bears long black hair; the hair on the median segment is long and white. The abdomen is wider than the thorax. The basal segment is shining, but bears large, widely separated, shallow punctures; the apex with a band of pale fulvous hair. The second segment is coarsely shagreened, without distinct punctures; the sides and a band on the apex are pale fulvous; and at the base are two elongated lines proceeding from the extreme base to near the middle. On each of the third, fourth, and fifth segments are two white marks, which form an almost continuous band. The pygidium is rough and laterally bears a thick mass of long dark fulvous hair. The second ventral segment is somewhat strongly punctured, and bears dark fulvous hair; the other segments are less strongly and uniformly punctured, and are fringed with rather long fulvous hair. The legs are red, with the knees black, and are clothed with white hair; the tibial spines are black, the calcaria pale.

This species agrees very closely in coloration with *M. mexicana*, except that the scape of the antennæ is black; but otherwise may be readily separated from it by the clypeus not being toothed, the lower part of the cheeks only very indistinctly toothed, the head less developed behind the eyes, the slope of the median segment much steeper (it being not so broadly and gradually rounded), and the basal maculæ on the second abdominal segment longer and narrower, the apical band also narrower.

6. **Mutilla cyllene.** (Tab. XIII. figg. 4, ♂; 5, ♂ organ; 6, ♀.)

Ferruginea; capite subtus nigro; geniculis coxisque nigris; abdomine nigro, subtus rufo; antennis nigris abdomine (♀ ♂) rufo; alis fuscis.
Long. 15 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Head rather strongly punctured; the vertex with long fuscous hair, the rest densely covered with long white hair; the apex of the clypeus transverse, its sides oblique; below the eyes the cheeks terminate on each side in a pair of short, stout, blunt teeth; the mandibles are punctured on the basal half. The eyes are large; the head is only slightly developed behind them, and not much narrowed. The antennæ have the scape sparsely pilose; the third and fourth joints are equal in length. The pronotum is coarsely punctured; the sides with silvery pubescence, the base with long pale hair, the apex with a broad dense band of long white pubescence. The mesonotum is shining, very coarsely and irregularly punctured; the hair black; the scutellum very slightly convex, coarsely punctured, covered with long blackish hair, the apex with white hair.

The tegulæ are large, not much developed behind, entirely glabrous, shining, impunctate. The median segment almost with a gradually rounded slope to the apex, reticulated, the basal area narrowed at the apex, where there is not a distinct tubercle; covered with long white hairs; the base on either side of the area with a thick mass of white pubescence. The propleuræ coarsely reticulated, the depressed apex crenulated throughout. The metanotum strongly punctured, covered with long white hair; the metapleuræ reticulated throughout, except two bands, which diverge at the bottom. The legs are covered with long white glistening hair. The radial cellule is wide, narrowed (but not much) towards the apex, and does not extend beyond the third cubital; the basal abscissa of the radius is sharply oblique, and is shorter than the apical, which is curved at the base and almost straight at the top. The first cubital cellule is as long as the radial; the second at the top is shorter than the space bounded by the first transverse cubital and first recurrent nervures; the third is longer at the top than at the bottom, and is sharply angled where the nervures are received or emitted. Both the recurrent nervures are received beyond the middle. The transverse median nervure is received distinctly before the basal nervure.

The female has the head and thorax ferruginous, except the sides from the upper third of the eyes and from below the antennæ in the middle; the legs ferruginous, the knees broadly black, the metatarsi infuscated; the antennæ black, the scape dull ferruginous. Head coarsely punctured; the vertex with rather long black hair, the lower orbits of the eyes and the cheeks with whitish pubescence, the oral region with long white hair; the clypeus blackish, broadly and shallowly incised, the sides terminating in blunt, somewhat triangular teeth; the mandibles broadly ferruginous at the base. The eyes of moderate size; the head not much narrowed or developed behind them. The antennæ stout; the scape covered with glistening fulvous and silvery hairs; the third joint not quite double the length of the fourth. The thorax coarsely punctured, above sparsely covered with blackish hair, the sides slightly, but distinctly concave, the pleuræ (except at the apex) impunctate; the median segment at the apex with an abrupt slope, and covered with white pubescence. The legs thickly covered with glistening silvery hair; the tibial spines black and ferruginous; the calcaria white. The basal segment of the abdomen black, with a steep oblique slope towards the head; rather closely covered with whitish hair; the apex with a thick band of white pubescence. The second and following segments of the abdomen black above, alutaceous, the sides and ventral surface ferruginous; from the base of the second segment run two white lines to beyond the middle, the apex with a broad sinuated white band; on the sides of the following three segments is a white mark, the whole forming a continuous band. The pygidium is closely punctured, the sides fringed with long blackish hairs. The hair on the back of the abdomen is black; the ventral segments are thickly fringed with silvery hair; the second segment strongly, the others finely punctured.

2 MM 2

This species agrees in size and coloration with *M. connexa* (including the coloration of the basal segment of the abdomen, which is only black at the base), but differs from it in having the abdomen distinctly punctured; the pygidium with only the lateral keels distinct at the apex, the centre being raised, smooth, and shining, and terminating in a closed longish area, which is acutely pointed at the base and apex; the hypopygium not dilated in the centre, and terminating laterally in two stout teeth.

Also a close ally of *M. cyra*, but it is a stouter species; the head wants the golden pubescence, which, besides, is black below; the thorax is more distinctly concave; the hair on the abdomen is black; and the white lines on the second segment are longer.

7. **Mutilla suspensa.**

Mutilla suspensa, Gerst. Archiv f. Naturg. xl. p. 299 (1874).

Hab. Mexico [1].

This species has the head and thorax red; but only the femora in front and the coxæ are red, the rest of the legs being piceous.

8. **Mutilla confusa.** (Tab. XIII. fig. 8, ♀.)

Ferruginea; antennis nigris, basi late rufa; abdomine nigro, segmento 2° albo 3-maculato. ♀.
Long. 6 millim.

Hab. Panama, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Head considerably wider than the thorax, coarsely punctured; sparsely covered with fuscous hairs on the top, the lower part with white hair. The eyes prominent, moderately large, reaching nearly to the top of the head, which is considerably and roundly narrowed behind them. The scape of the antennæ shining, sparsely punctured and haired, grooved above; the flagellum covered with a microscopic down; the third joint one half longer than the fourth and narrowed at the base; the four basal joints are reddish, the others black. The thorax is narrowed and rounded at the base, wider at the apex, the apex of the pronotum arcuate; above coarsely punctured; the mesopleuræ shining, impunctate; the median segment with a rather steep, rounded slope to the apex. The upper part of the thorax with long black hairs; the lower part of the pleuræ with a silvery pubescence. The basal segment of the abdomen short, becoming gradually dilated towards the apex, semiperpendicular, shining, impunctate; a stripe of silvery-white hair on each side at the apex. The second and following abdominal segments coarsely alutaceous; the second segment with black, the other segments with longer white hairs; at the base of the second segment are two oval white marks, and on the apex are two white lines with an oval mark between them; on the following three segments are white marks, which form a continuous line. The pygidium is fringed laterally with long dark fuscous hairs. The second ventral segment rather strongly

punctured; the apices of the ventral segments fringed with white hair. The legs covered with white hairs; the tibial spines slender, sharp, fulvous.

9. **Mutilla leona.**

Mutilla leona, Blake, Trans. Am. Ent. Soc. iii. p. 230 [1], xiii. p. 200 [2].

Hab. Mexico (*Sumichrast* [1 2]).

10. **Mutilla dædala.** (Tab. XIII. fig. 9, ♀.)

Ferruginea; abdomine nigro, subtus rufo, supra late cuneo-maculato. ♀.
Long. fere 8 millim.

Hab. Mexico, North Yucatan (*Gaumer*).

Head as wide as the thorax, closely covered with large, deep, roundish punctures, and sparsely clothed with long black hairs, the oral region with long fulvous hair. Eyes large, prominent, the head obliquely narrowed behind them. The antennæ stout, black, the flagellum dull piceous beneath; the scape punctured, shining, bearing long white hair; the third joint one half longer than the fourth. Thorax very coarsely punctured, covered with long black hair, the hair on the median segment paler; the mesopleuræ impunctate, covered with white pubescence. The sides of the thorax straight, if anything a little dilated towards the apex, which has an abruptly rounded slope, and has the punctures longer and deeper than they are on the mesonotum. The abdomen is longer than the head and thorax united. The basal segment is ferruginous, its apex with a band of golden pubescence. The second segment is coarsely alutaceous above, the sides with large punctures; on the base are two large broadly oval golden marks, which extend near to the middle; the apex has a broad golden band which occupies more than one third of the length of the segment. The other segments are golden, except for a wedge-shaped black mark in the middle; the fourth segment above at the base is black, with the extreme base ferruginous, and is closely punctured. The pygidium is ferruginous, finely punctured, and fringed laterally with long fulvous hair. The ventral segments are ferruginous at the base (the second to the extreme apex); the second segment is coarsely and deeply punctured; the others are more finely punctured and fringed with golden hair. The legs are covered with glistening white hairs; the tibial spines are black.

M. leona agrees, judging from the description, closely with this species; but the two are, I think, distinct: e. g. *M. leona* is only 5·5 millim. in length; the punctures on the head are described as "elongate" (while in *M. dædala* they are round). Moreover, in *M. dædala* the median segment is not "reticulate"; the second abdominal segment has two large broadly ovate marks (instead of "two short longitudinal stripes"); and, lastly, the abdomen is not "ovate," but broadly dilated at the base, becoming sharply narrowed from the second segment. In neither of his descriptions does Blake describe the colour of the antennæ nor of the tibial spines.

b. *Head black.* (Species 11–19.)

† *Legs reddish.* (Species 11–16.)

* *Abdomen for the greater part ferruginous.* (Species 11 and 12.)

11. **Mutilla impudica.** (Tab. XIII. fig. 11, ♀.)

Ferruginea; capite nigro; antennis nigris, scapo rufo; abdomine argenteo- et nigro-maculato. ♀. Long. 7 millim.

Hab. Mexico, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Head wider than the thorax, coarsely punctured, covered with long blackish hair; the oral region with the hair silvery and shorter; the base of the mandibles ferruginous. The eyes large, reaching to the top of the head, which is moderately developed behind them and not much narrowed. The scape of the antennæ sparsely covered with silvery hair; the flagellum more or less fuscous beneath; the third joint nearly twice the length of the fourth. The thorax very coarsely punctured above, and covered with moderately long black hair, the sides slightly concave; the median segment broadly rounded at the top and with a rather abrupt slope; the mesopleuræ smooth and impunctate. The abdomen a little wider than the thorax, above bearing long black hair. The basal segment is gradually dilated to the apex and confluent with the second; it is covered with long pale hair, and at the apex has a band of white pubescence. The second segment is punctured rather strongly, especially towards the sides; near the base are two golden lines, which reach to the middle but do not touch the base; at the apex is a belt of golden pubescence. The third, fourth, and fifth segments are shagreened, blackish in the middle, at the sides with a mark of golden pubescence, that on the fifth united to the opposite one at the apex. The pygidium is punctured and fringed laterally with long fulvous hair. The second ventral segment is rather strongly punctured; the others much more finely punctured at the apex, where there is a sparse belt of long fuscous hair. Legs with the femora and tarsi sparsely covered with white hair, the hair on the metatarsi thicker, the other tarsal joints covered with silvery pubescence and blackish at the tips. The tibial spines are long and thick.

This species bears a general resemblance to *M. cyra*, but it is smaller, has the head entirely black, and the eyes are placed much higher up on the head. From the species of this group with reddish legs it may easily be known by the ferruginous abdomen with golden markings.

M. subrobusta may be known from *M. impudica* by the head having a thick brassy pubescence, the thorax stouter and hardly convex along the sides, the apex of the median segment more rounded and not so sharply oblique, and the abdomen shorter compared to the length of the thorax, its apex being densely covered with reddish hair; is also a smaller insect.

12. **Mutilla subrobusta.** (Tab. XIII. fig. 10, ♀.)

Nigra; thorace ferrugineo, abdominis apice late aureo-sericeo. ♀.
Long. 6 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Black; the basal half of the antennæ, the thorax, and legs ferruginous; the knees, a mark on the apex of the median segment, the breast, and the pleuræ more or less, black; the apex of the first and second abdominal segments, the sides of the latter and two lines running from its base to the middle, a mark on either side of the third, fourth, and fifth abdominal segments, and the edges of the ventral segments, silvery-white. The head not very strongly punctured, closely covered with dull golden pubescence and with some long black hairs. The eyes moderately large, the head obliquely narrowed behind them. The scape of the antennæ covered with white hair, the flagellum with a silvery pubescence; the third joint one half longer than the fourth. Thorax quadrate, about twice the length of the head, very slightly contracted inwardly at the middle, a little dilated towards the apex; the sides roughly crenulated; the apex rounded, with a semiperpendicularly rounded slope; the pro- and mesopleuræ smooth, impunctate. The abdomen a little shorter than the head and thorax united; the second segment with distinctly separated punctures all over, its apex and the following segments covered with a fiery-red, iridescent pubescence; the pygidium thickly covered with dull fulvous hair. The femora slightly, the tibiæ and tarsi thickly, covered with glistening white hair; the calcaria pale; the spines fulvous.

This species has the general coloration of *M. centralis*, but it is smaller; the head is covered with a brassy pubescence, the apex of the thorax is more rounded, and the third and following segments want the white maculæ and are fiery-red.

** *Abdomen black.* (Species 13–16.)

13. **Mutilla centralis.**

Ferruginea; capite et abdomine nigris; antennis rufis, apice late nigro. ♀.
Long. 10 millim.

Hab. GUATEMALA, Paso Antonio 400 feet (*Champion*); PANAMA, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Black; the basal half of the antennæ, the thorax, and legs red; the knees black; the apex of the first abdominal segment, two longitudinal lines on the second segment reaching beyond the middle, a line on the apex of the same segment, two longitudinal lines running from this to the apex of the abdomen, and the edges of the ventral segment, silvery-white. The head coarsely punctured; the vertex sparsely covered with long black hairs; above the antennæ and behind the eyes more thickly clothed with

silvery-white hair. The eyes large; the head not much narrowed behind them. The scape of the antennæ bearing white hairs; the third joint twice the length of the fourth. The thorax not much narrower than the head and not twice its length; the sides straight, not narrowed towards the apex, which has a semiperpendicular slope, rounded, the centre truncated; above coarsely rugosely punctured; the pro- and meso-pleuræ smooth, impunctate, glabrous; the fore part of the thorax above with some black hairs. The sides of the second abdominal segment coarsely punctured, its base with some long black hairs; the rest of the abdomen sparsely covered with pale hairs; the pygidium thickly covered at the sides with long fulvous hair. The femora sparsely, the tibiæ and tarsi thickly, covered with long glistening white hairs; the calcaria white; the tibial spines stout, fulvous.

Some specimens of what are probably a variety, from Bugaba, Volcan de Chiriqui, and Caldera (*Champion*), differ from the type in having the lines on the second abdominal segment continued to the end of the segment. I can find no structural difference between them; but the variety is smaller in size—varying from 5·5 to 7 millim.

14. **Mutilla clonia.**

Long. 6 millim. ♀.

Hab. GUATEMALA, Pantaleon 1700 feet (*Champion*).

Similar in coloration to *M. centralis*, except that, in addition to the knees, the femora are broadly black at the apex, and the breast and the lower part of the pleuræ are black; the abdominal markings are pale fulvous, not clear white; the median segment has a broad black mark; and the pygidium is ferruginous.

The head wider than the thorax, rugosely punctured; the top with long fuscous hair, the lower part with the hair shorter and silvery; the eyes large, prominent, the head obliquely narrowed behind them. The five basal joints of the antennæ are ferruginous; the scape with some white hair; the flagellum with a pale down; the third joint about one quarter longer than the fourth. Thorax coarsely punctured, sparsely covered with long black hairs; the sides at the base slightly but distinctly concave; the median segment with a semioblique slope. The basal segment of the abdomen with a sharp oblique slope, thickly covered with long pale hair, and at the apex there is a fulvous band. The second and following segments alutaceous, except the base of the fifth, which is broadly and finely punctured. At the base of the second segment are two fulvous marks, which do not reach to the middle, and are dilated towards the apex; the band on the apex is broad and is dilated at the middle and at the sides. The fulvous marks on the following three segments form a continuous band. The pygidium is finely punctured and fringed with long fulvous hair. The ventral segments are fringed with fulvous hair; the second segment sparsely punctured. The

legs are thickly covered with glistening white hair; the tibial spines are sharp, long, and fulvous.

15. **Mutilla prominens.**

Nigra; thorace ferrugineo; antennis nigris, basi rufa; abdominis maculis fulvis. ♀.
Long. 8 millim.

Hab. GUATEMALA, Capetillo (*Rodriguez*).

Head not much wider than the thorax, rugosely punctured, bearing pale fulvous hair; the basal half of the mandibles ferruginous, the apical half black; the eyes moderate in size, not reaching to the top of the head, which is roundly narrowed behind them. The antennal tubercles and the first three joints of the antennæ ferruginous; the scape with some white hairs, the flagellum with a pale down; the third joint nearly twice the length of the fourth. The thorax above coarsely punctured; the mesopleuræ impunctate and shining; the mesonotum in front with fuscous, behind, and also the median segment, with silvery hair; the sides almost straight; the apex of the pronotum rounded; the median segment oblique at the apex, the middle not so strongly punctured as the sides. The abdomen wider than the thorax; the basal segment oblique, sparsely covered with long pale hairs; the apex with a belt of pale golden hair. The second segment is coarsely alutaceous, and covered above with some blackish, at the sides with silvery, hair; at the base are two large fulvous marks, and there is a broad fulvous belt at the apex. The third to the fifth segments have a large squarish mark on either side, not continuous, and those on the fifth unite at the apex. The pygidium is longitudinally striated and fringed laterally with pale fulvous hair. The ventral surface is ferruginous; the segments all punctured at the apex, the second also sparsely at the base, and fringed at the apex with fulvous hairs. The femora sparsely, the tibiæ and tarsi more thickly, covered with pale fulvous-white hair; the tibial spines long and sharp.

Allied to *M. centralis*, but smaller, and with the slope of the median segment more abrupt, the markings on the abdomen golden (not white), and the pygidium longitudinally striolate (not punctured).

16. **Mutilla lilea.**

Nigra; thorace ferrugineo, subtus et apice nigro-maculatis; abdominis maculis albis. ♀.
Long. 7 millim.

Hab. PANAMA, San Feliz in Chiriqui (*Champion*).

Head a little wider than the thorax, finely rugose, covered with long pale hairs, and on the vertex there is a close pale fulvous pubescence; the basal half of the mandibles ferruginous. The eyes large, reaching to the top of the head, which is somewhat obliquely narrowed behind them. The scape of the antennæ is distinctly curved and

bears some white hairs; the third joint is twice the length of the fourth. Thorax coarsely punctured, the sides nearly straight; the apex of the pronotum semi-transverse; the median segment with a rounded rather sharp slope. Above, the thorax bears long hairs, which are fuscous in front, on the median segment pale. The impunctate mesopleuræ are covered with a short silvery pubescence. The breast, the part immediately over the coxæ, and an elongated broad mark on the median segment, black. The basal segment of the abdomen becomes gradually dilated to the apex; it is smooth and impunctate, and bears some long pale hairs, and on the apex there is a band of silvery pubescence. The second and following segments are alutaceous, and sparsely covered with long fuscous hairs; on the base of the second segment are two white lines, which reach a little beyond the middle, and also a white band, dilated in the centre; on each side of the following segments is a broad mark, the three forming a continuous band. The pygidium is coarsely alutaceous, densely fringed laterally with long fulvous hair. The second ventral segment bears widely separated punctures; the other segments are more closely and finely punctured, and are fringed with white hairs. The legs are covered with white hair; the knees broadly and the coxæ are black; the tibial spines are long, sharp, and fulvous.

This species resembles *M. prominens*, but the markings on the abdomen are white (not golden); the apex of the median segment has a rounded slope (not sharply oblique); the breast and a longish mark on the median segment are black; the pygidium is not striolate; the antennæ are ferruginous, except at the apex; and the ventral surface of the abdomen is entirely black.

†† *Legs black.* (Species 17–19.)

17. **Mutilla oajaca.**

Mutilla oajaca, Blake, Trans. Am. Ent. Soc. iii. p. 228, fig. (♀ & ♂) [1], and xiii. p. 196 [2]; Cresson, in Wheeler's Rep. Expl. and Surv. west of 100th Merid., Zool. p. 709 [3].

Hab. North America, Colorado [3].—Mexico (*Sumichrast* [1]).

This species is larger than either of our two others of this section with black legs, the female being 13 millim. in length. Judging from Blake's figure (♀), it has the head wider compared to the thorax than in *M. högei*; and from both it differs in having the marks and bands on the abdomen golden, while with our species they are clear silvery-white. Blake states that sometimes the head may be ferruginous.

The male is described; it is black, with the abdomen ferruginous and the wings blackish.

18. **Mutilla högei.** (Tab. XIII. fig. 18, ♀.)

Nigra; thorace ferrugineo; abdomine subtus femoribusque posterioribus rufis; abdominis maculis albis. ♀.
Long. 11 millim.

Hab. Mexico, Cordova (*Höge*).

Black, the thorax red; the underside of the four hinder femora, and the sides and ventral surface of the abdomen, more or less brownish-red. The head coarsely punctured, sparsely haired; behind the eyes the hair is thicker, longer, and whiter. Eyes of moderate size; the head not much narrowed behind them, and well-developed there. The scape of the antennæ reddish beneath; the third joint one half longer than the fourth. The thorax quadrate, twice the length of the head, and narrower than it; the sides broadly contracted inwardly, crenulated; coarsely punctured, above sparsely covered with short white hair; the pro- and mesopleuræ smooth, impunctate; the apex of the median segment semiperpendicular, truncated, the sides rounded. Abdomen not much wider than the thorax, about as long as the head and thorax united; the second segment coarsely punctured all over; the basal segment with a distinct striated neck, from which it is gradually dilated to the apex, where it becomes confluent with the second. The apex of the first segment, the sides and apex of the second broadly, two longitudinal lines on the latter reaching to the middle, and a broad mark on the third, fourth, and fifth segments, and the apices of the ventral segments, silvery-white; the pygidium thickly clothed laterally with fulvous-golden hair. The femora slightly, the tibiæ and tarsi thickly, covered with stiff silvery-white hairs; the tibial spines thick, blackish, the tarsal spines fulvous; the calcaria white.

A specimen from Rincon in Guerrero (*H. H. Smith*), apparently belongs to the same species; it has the inward curve in the thorax not so deep, the femora entirely black, the abdomen black, except the apices of the third, fourth, and fifth segments, which are rufous above in the middle, the scape of the antennæ only rufous at the apex, and the tibial spines rufous. *M. högei* closely resembles *M. centralis*, but differs from it in having the thorax curved inwardly at the sides.

19. **Mutilla porcata.** (Tab. XIII. fig. 7, ♀, var.)

Nigra; thorace ferrugineo; abdomine albo-maculato. ♀.
Long. 7–8 millim.

Hab. Panama, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Head distinctly wider than the thorax, coarsely punctured; sparsely covered with long black, on the oral region with shorter silvery, hair. Eyes large, reaching to the top of the head, which is sharply and obliquely narrowed behind them. The scape of the antennæ sparsely covered with white hair, the flagellum with a dense silvery pubescence; the second joint and the antennal tubercle reddish; the third joint one half longer than the fourth. The thorax covered with long fuscous hair, very coarsely punctured, except the mesopleuræ, which are smooth and impunctate; the apex of the pronotum rounded; the sides of the mesothorax almost straight, rough; the median segment at the top broadly rounded, the lower part with a steep slope. The abdomen wider than the thorax. The basal segment short, becoming gradually wider towards

the apex, bearing pale hairs, the sides and apex with a band of white pubescence. The second segment alutaceous, without distinct punctures, except at the sides; above rather thickly covered with black hair; the sides have the hairs silvery; at the base are two white lines, which reach to the middle; the apex and sides have a white band dilated in the middle. The base of the third segment has a finely punctured band; the rest of it, as are also the other segments, alutaceous, and with a white band on the sides and blackish hair. The pygidium is punctured, and fringed laterally with long fulvous hair. The ventral segments are fringed with white hair. The femora and tibiæ are sparsely covered with white hair; the tibial spines slender, sharp, and pale fulvous; the tarsi thickly covered with white hair, the spines fulvous.

A variety? (♀), from Caldera, Panama (*Champion*) (fig. 7), has the white line on the second abdominal segment continued to the white band on the apex; and the apex of the first antennal joint, and also the third joint beneath, reddish.

M. porcata is identical in coloration with *M. högei*, except that the legs have no red, being entirely black, differing otherwise in the head behind the eyes being sharply and obliquely narrowed (in *M. högei* it is only very slightly narrowed, and not at all obliquely); the head wider, as compared with the width of the thorax; the thorax laterally not concave, becoming wider towards the apex, and more thickly covered with black (instead of pale) hair; the median segment at the top more broadly rounded; and the spines on the tibiæ narrower, sharper, and longer.

c. *Head, thorax, and abdomen black.* (Species 20.)

20. **Mutilla gaumeri.** (Tab. XIII. fig. 12, ♀.)

Nigra; capite aureo-hirto, abdomine fulvo-maculato.
Long. 10 millim.

Hab. Mexico, North Yucatan (*Gaumer*).

Black; the vertex and front covered with a fulvous pubescence; the apex of the first segment, two oval maculæ on the base of the second segment, the apex of the latter broadly, and the sides of the other segments covered with golden-fulvous pubescence. Head coarsely punctured, narrower than the thorax, retreating sharply behind the eyes, which are large and reach nearly to the top; the base of the mandibles ferruginous. The scape of the antennæ punctured, and bearing rather long fulvous hair; the flagellum almost glabrous, ferruginous beneath. Thorax short, about twice the length of the head, not much dilated towards the apex, convex above, the slope at the base and apex rather abrupt; coarsely punctured, except the pleuræ, which are smooth; the sides are rough from the punctures, but otherwise are not tuberculate or incised; on the median segment the punctures are larger, more irregular, and almost form reticulations. There is no pubescence on the thorax, but it bears black or fuscous hair. The abdomen is longer and somewhat wider than the thorax. The first segment

becomes gradually wider towards the apex and is confluent with the second; the base is toothed. The sides of the second segment bear large punctures; the middle of this segment, and also the others, being impunctate, but rough. The basal ventral segment is ferruginous, and broadly toothed in the middle; the second segment is coarsely punctured; the other ventral segments are not so strongly punctured, and they are fringed with golden hair. The pygidium is rough, black, and laterally bears long fulvous hair. In addition to the golden pubescence, the dorsum of the abdomen bears long black hair. Legs black, covered with white hair; the calcaria white; the apices of the tarsi ferruginous.

2. Males, of which the females are unknown.

i. *Fore wings with three cubital cellules.* (Species 21–39.)

* *Abdomen entirely ferruginous, or with the base more or less blackish; the head, thorax, and legs black; the wings smoky.* (Species 21–38.)

† *The basal segment of the abdomen black.* (Species 21–33.)

21. **Mutilla amulæ.** (Tab. XIII. fig. 3, ♂ organ.)

Long. 20 millim. ♂.

Hab. Mexico, Amula in Guerrero 6000 feet (*H. H. Smith*).

Head punctured rather strongly, much narrower than the thorax, densely covered with long griseous hair, which almost hides the sculpture, the hair being especially long immediately below the antennæ; the clypeus smooth and shining; the mandibles ferruginous before the apex. The eyes large, the incision wide; the head not much narrowed behind them. The scape of the antennæ punctured, sparsely haired; the third and fourth joints subequal. The pronotum densely covered with griseous hair, punctured, the apex broadly arcuate. The mesonotum at the base thickly covered with griseous, at the apex more sparsely with fuscous, hair; reticulated throughout, and with two furrows down the centre. The tegulæ large and shining, produced behind, the apex not much raised, the base punctured; the mesonotum not excavated alongside of them. The scutellum moderately concave, reticulated, bearing long pale hair. The median segment above with only a slight slope, the apex abruptly oblique; reticulated, a **V**-shaped area at the base, which is thickly covered with silvery pubescence, the rest of the segment with long fuscous hair. The mesopleuræ not very strongly punctured, and densely covered with pale pubescence; the metapleuræ stoutly reticulated. The basal segment of the abdomen punctured, covered with long white hair; the second segment shining, the middle impunctate, the rest of it with widely-separated punctures; the sides and apex with rufo-fulvous hair. The other segments finely punctured at the base; the apex with rufo-fulvous hair. The pygidium rather

strongly punctured, densely covered with fulvous pubescence; the middle keeled, the keel ending at the apex in a tooth, flattened laterally, the apex (viewed laterally) being rounded. The first ventral segment black, laterally punctured; the keel straight; the apex triangular, projecting; the base triangular. The second ventral segment rather strongly punctured all over; the other segments finely punctured at the apex. The hypopygium with the basal half raised above the apical half; at the sides are two stout oblique keels, ending almost in teeth. The ventral segments are fringed with rufous hairs. The legs densely covered with white hair. The radial cellule is not very wide, and reaches beyond the third cubital cellule; the first and apical abscissæ of the radius curved, the former shorter than the latter; the second cubital cellule at the base is sharply lanceolate, the third wider at the bottom than at the top; the second transverse cubital nervure is curved towards the apex, the third sharply angled above the middle; the first and second recurrent nervures are both received shortly beyond the middle; the transverse median nervure is received a little before the basal nervure.

22. **Mutilla exacta.** (Tab. XIII. fig. 20, ♂ organ.)

Long. 15 millim. ♂.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Agrees exactly in coloration with *M. amulæ*, but easily known from it by being 5 millim. less in length; also by the four teeth on the cheeks; the more strongly gibbous scutellum; the pygidium at the apex having two short stout keels forming a triangular area, the part enclosed being depressed; the second segment only finely punctured at the sides; the radial cellule broader, and the second cubital cellule at the base not so sharply lanceolate; the first transverse cubital nervure not straight, but curved; and the second recurrent nervure received nearer the apex of the wing.

Head narrower than the thorax; the top shining, strongly punctured, sparsely covered with rather short pale hair, the rest of the head densely covered with longer white hair, that on the oral region being especially long; below the antennæ the head retreats inwardly with a steep slope, which is shining and glabrous; at the sides are two stout, rather long testaceous teeth, behind which is a thick patch of yellow hair, touching the eyes; the apex of the clypeus rounded. The eyes are large, the incision wide; the head retreats sharply behind them. The scape of the antennæ shining, very sparsely haired; the flagellum with a scattered pile; the third joint distinctly longer than the fourth. Prothorax coarsely punctured; the base with short pale hair, the apex with a dense band of white pubescence. Mesonotum very strongly punctured, the punctures distinctly separated, deep, roundish or elongate; thickly covered with short dull rufous hair. The tegulæ large, projecting behind; the base shining, impunctate, the apex thickly covered with pale fulvous hair. The scutellum strongly

gibbous, coarsely punctured, and covered with long pale hair. The median segment reticulated; there is a thick mass of white hair at the base, which extends obliquely to the sides; the rest of the segment with a short white pubescence, and with long pale hair; the apex has an oblique slope, and at its top in the middle is a short roundish shining tubercle. The propleuræ are strongly punctured in the middle; the mesopleuræ densely covered with white hair, hiding the sculpture; the apex of the metapleuræ reticulated. The basal segment of the abdomen punctured, the base strongly toothed; black, except at the apex, sparsely covered with long white hair. The second segment at the sides with scattered very minute punctures; the apex thickly fringed with rufous hair. The other segments at the base finely and closely punctured, and covered with rufous hair. The pygidium punctured, except down the middle, which terminates in two short stout keels, enclosing a depressed triangular area. The first ventral segment broadly keeled, depressed in the middle; a small round fovea on either side at the base, and with some large round punctures down the sides. The second ventral segment with scattered punctures; the others with finer and closer punctures, and fringed with short fulvous hair. The hypopygium punctured laterally, covered with fulvous hair; the apex projecting, in the middle raised; the sides terminating in stout blunt teeth. Legs covered with rather long white hair. The wings are lighter-coloured at the base, and have white lines throughout; the radial cellule is wide and does not extend much beyond the third cubital; the basal and apical abscissæ of the radius are both curved, the former being a little the shorter of the two. The first transverse cubital nervure is curved at the base; the second cubital cellule at the top is somewhat shorter than the space bounded by the first transverse cubital and the first recurrent nervures; the third cubital cellule at the top is a little shorter than at the bottom; the second transverse cubital cellule is roundly elbowed in the middle, the third broadly curved, but with the upper part straight. The transverse median nervure is received distinctly in front of the basal nervure. The first recurrent nervure is received shortly beyond the middle, the second in the apical fourth of the cellules.

The male of *M. oajaca* as described by Blake agrees with this species in coloration, and almost in size; but the structure of the pygidium is not mentioned by him, nor does he describe any peculiarity about the face. The head and thorax of *M. oajaca* are described as being clothed with "scattered pale yellowish pubescence," the pubescence on the metathorax (median segment) "black," and there is no mention of a tubercle; the first cubital cellule is said to be about as "long as the marginal" (radial), which is certainly not the case with our species.

23. **Mutilla connexa.** (Tab. XIII. fig. 21, ♂ organ.)

Long. 13–14 millim. ♂.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

This insect is identical in coloration with the foregoing (*M. exacta* and *M. amulæ*), but it may be easily separated from either of them by the very different structure of the pygidium. This has, along the sides, a distinct keel, and in the middle at the apex are two short, stout keels, which do not unite at the apex. The oral region is normal and bears no teeth; the wings are hardly lighter at the base, and are more deeply violaceous; the first cubital cellule is longer compared to the radial; and the tubercle on the median segment is stouter.

Head narrower than the thorax; the vertex sparsely covered with long blackish hairs and laterally with a whitish pubescence; the cheeks and the oral region densely covered with long white hair; the apex of the clypeus rounded, shining; the cheeks laterally ending in two blunt piceous roundish short tubercles. The eyes large, reaching quite to the top of the head, the incision wide; the head only moderately developed behind them and rather sharply narrowed. The scape of the antennæ has short white sparse hair above, the flagellum a brownish microscopic pile; the third joint is, if anything, longer than the fourth. The prothorax is coarsely punctured, its apex with a dense band of white pubescence, and almost truncated in the middle. Mesonotum shining, and having large irregular, mostly widely separated, punctures, its hair long and black. The tegulæ large and shining, the underside with pale fuscous hair; they are not much developed posteriorly. The scutellum broadly convex, coarsely punctured; the base with some long black hairs, the rest covered more thickly with long white hair. The median segment reticulated, distinctly narrowed towards the apex, which has an oblique slope, the top of the slope, however, being rounded; at the base in the middle is an elongated area, rounded at the apex, where it terminates in a tubercle; at its sides at the extreme base is a small elongate depression, densely covered with pale pubescence; the rest of the segment with whitish hair, and at the sides above there is a white pubescence. The basal region of the propleuræ strongly punctured, the apex excavated, crenulate at the base below; the mesopleuræ punctured, densely covered with white pubescence; the metapleuræ at the apex punctured. The basal segment of the abdomen black at the anterior half, shining, with some widely separated, scattered punctures; the base stoutly toothed; the second segment with some indistinct scattered punctures along the sides, at the apex fringed with rufous hair; the other segments with their basal halves impunctate, their apical halves clothed with rufous hair. The pygidium punctured, except at the middle before the keels; down the sides run stout keels, and in the middle is a small depressed area bounded by stout keels, which are curved and unite at the apex; the hair is rufous and rather long. The hypopygium is punctured at the sides; the apex terminates in three rounded projections, in front of which is a stout raised, oblique point, this being rounded at the end. The basal ventral segment is distinctly keeled in the middle, which is slightly waved; the sides with a few punctures. The second ventral segment is punctured; the others are impunctate and fringed with fulvous hair. The legs thickly covered with long glistening white hair. The wings are lighter along the

costal cellule. The radial cellule is wide, and as long as the first cubital. The first abscissa of the radius is slightly curved and shorter than the apical, which is also curved and almost roundly elbowed at the top. The first transverse cubital nervure is curved widely, the second slightly, the third elbowed near the bottom and at the middle, where the nervures are emitted. The second cubital cellule at the top is shorter than the space bounded by the first transverse cubital and the first recurrent nervures; the third cellule is wider at the bottom than at the top. The first recurrent nervure is received shortly before the middle, the second in the apical third of the cellules.

This insect also agrees with *M. oajaca* (♂), and has, like it, the first cubital cellule as long as the radial; but the head and thorax in *M. oajaca* have "scattered pale yellowish pubescence," the median segment has "scattered black pubescence," the abdomen is "finely punctured," the basal segment is "black," the third cubital cellule is "subpentagonal" (in the present species it is really hexagonal), and the hair on the legs is "pale yellowish."

24. **Mutilla vanduara.**

Long. 12–13 millim. ♂.

Hab. MEXICO, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Head moderately strongly punctured, the punctures distinctly separated; densely covered with griseous hairs, which hide the sculpture, except on the vertex; the apex of the clypeus truncate in the middle; the mandibles ferruginous before the apex, the base densely covered with long white hair. The eyes are large; the head not much developed behind them, and roundly narrowed; the incision wide, oval. The scape of the antennæ is densely covered with glistening white hair, its extreme apex ferruginous; the flagellum is covered with a dull microscopic pile; the third joint is equal in length to the fourth. The thorax is as wide as the head; the pronotum punctured and densely covered with a griseous-white pubescence, which is densest at the apex. The mesonotum is shining, marked all over with large, elongate punctures; there are two furrows down the middle; at the base there is some white pubescence, the rest of it with blackish hair. The tegulæ very shining, the inner side at the apex with whitish pubescence; the apex piceous. The scutellum flattish, coarsely rugosely punctured, and bearing long white hairs, especially at the apex. The median segment is reticulated, and has a gradually rounded slope to the apex; the base with a dense white pubescence, the rest covered thinly with long pale hair; the basal area elongate, narrowed towards the apex; there can hardly be said to be a tubercle at its apex. The propleuræ rather strongly punctured, covered with a whitish pubescence, the apical depression crenulated throughout. The mesopleuræ punctured, but hardly so strongly as the propleuræ, densely covered with white hair; there is a shining depression at the

base. The apex of the metapleuræ strongly reticulated; the rest impunctate, except a punctured wedge-shaped part in the middle, which does not extend to the top. The legs (especially the tibiæ and tarsi) densely covered with long white hair; the femora with scattered punctures; the tibial spines are fulvous, the calcaria white. The basal segment of the abdomen entirely ferruginous, except the extreme base and the teeth, which are stout; it has scattered punctures and is covered with long white hairs. The second segment with fine scattered punctures; the base slightly depressed and more closely and strongly punctured, and fringed with rufous hair. The other segments finely punctured and fringed with rufous hair. The pygidium punctured, rather densely covered with long fulvous hair; the apex is oblique; down the centre of it there is an area, which is open at the apex and rounded at the base, the keel forming it curving round at the bottom and going along the edges. The first ventral segment punctured, at the base projecting in the middle in a blunt tooth, at the apex triangular, oblique; the second segment with some rather large punctures; the other segments finely punctured. The hypopygium has a moderately stout keel, raised at the base into a blunt tooth; inside of these towards the apex are two flat, brown, curved teeth; its apex is transverse. The wings are lighter coloured at the base; the radial cellule does not extend beyond the third cubital, is moderately wide, and longer than the first cubital; the basal abscissa of the radius is straight, oblique, and shorter than the apical, which is elbowed near the top; the second cubital cellule at the top is about the length of the space bounded by the first transverse cubital and the first recurrent nervures; the third cubital cellule is narrower at the top than at the bottom; the first transverse cubital nervure is broadly, the second sharply curved, the third sharply angled above the middle; the transverse median nervure is recurved in front of the basal.

25. **Mutilla talus.**

Long. 12 millim. ♂.

Hab. Panama, Bugaba 800 to 1500 feet (*Champion*).

Head not much narrower than the thorax, apparently coarsely punctured, the sculpture hidden by a dense glistening white pubescence, except round the ocelli; the clypeus shining, impunctate, the apex broadly rounded; the mandibles dull ferruginous before the apex. The eyes are large, the head very slightly developed and narrowed behind them. The prothorax with scattered punctures; the base without much pubescence, the apex, however, having a dense broad band of whitish pubescence. The mesonotum with large, deep, distinctly separated punctures; there is an indistinct keel down the middle, and on either side of this a furrow. The scutellum is moderately convex, and it bears large punctures and a dense covering of long glistening white hair. The tegulæ project behind; the basal half shining, glabrous, the apical half with a dense covering of griseous hair, except on the extreme outer edge. The median segment reticulated, and

with a gradually rounded slope to the apex; covered with long pale hair; the basal area elongate, curved inwardly before the apex; the apical tubercle shining, not very distinct. The basal segment of the abdomen shining, and with some large, widely separated punctures and some longish hair; the extreme apex ferruginous and fringed with rufous hair. The second segment shining, the sides with some shallow scattered punctures; the apex, as also the other segments, fringed with rufous hair; the other segments indistinctly punctured at the base. The pygidium punctured in the middle, covered with rufous hair; down the sides is a broad keel, which becomes more distinct and wider towards the apex; and there is a still broader central keel, the apex of which is bluntly rounded. The basal ventral segment is keeled down the centre and slightly depressed; the sides with some large punctures. The second segment with some fine scattered punctures, and with a transverse row of larger ones before the apex. The other segments bear some fine punctures and a sparse fringe of fulvous hair. The base of the hypopygium is raised, and triangular at the apex of the raised part; the apex is depressed and in the middle projects into a triangle. The radial cellule is wide and longer than the first cubital; the basal abscissa of the radius is straight and oblique, the apical abscissa curved, and slightly elbowed at the top. The second cubital cellule is narrower at the top than the space bounded by the first transverse cubital and the first recurrent nervures; the third cubital cellule at the top is as wide as the space bounded by the second transverse cubital and the second recurrent nervures; the third transverse cubital nervure bulges out in the middle. The recurrent nervures are recurved about the same distance beyond the middle of the cellules. The transverse median nervure is received before the basal.

26. **Mutilla clutha.**

Long. 12 millim. ♂.

Hab. PANAMA, Volcan de Chiriqui 2000 to 3000 feet (*Champion*).

Head coarsely punctured, densely covered all over with glistening white hair; the clypeus with an oblique slope to the apex, which is transverse, the sides oblique; the mandibles piceous at the subapical tooth. The eyes large, the head moderately developed behind them, and roundly and rather sharply narrowed; the incision wide, semi-oblique. The scape of the antennæ punctured, moderately covered with white hair; the flagellum with a whitish pile; the third and fourth joints subequal. The pronotum rather strongly punctured; the base with long pale hairs; the apex with a dense band of white pubescence. The mesonotum shining, the punctures large and elongate; there are two furrows and also a smooth shallow keel down the sides; the hair is sparse and blackish. The tegulæ large, shining, dilated behind; the apex on the inner side thickly covered with greyish hair. The scutellum flattish, not much raised over the mesonotum, covered with large, distinctly separated punctures, the apex with long

white hair. The median segment with a gradually rounded slope to the apex, reticulated, covered with long white hair, the base with a dense white pubescence; the area elongate, not much narrowed towards the apex, where the tubercle is moderately distinct. The propleuræ scarcely excavated behind, above with large punctures; the sculpture of the mesopleuræ hidden by the dense silvery pubescence; the metapleuræ reticulated behind. The basal segment of the abdomen shining, bearing large, round, widely separated punctures, there being a ring of punctures at the apex, the hair sparse and long; the second segment almost impunctate; the other segments finely punctured on the apical half and fringed with fiery-ferruginous hair. The pygidium punctured closely and broadly at the base and sides, the apical part in the middle bluntly and slightly ridged, the apex perpendicular; down the centre is a slight keel, ending at the top and bottom in a distinct blunt tooth, the lower tooth being the larger. At the base of the first ventral segment are three broad keels—the basal two shining and bluntly pointed at the apex, the apical one opaque and rounded; the central keel slightly raised at the apex; the sides a little hollowed and with some large punctures. The second ventral segment has a few punctures; the other segments are punctured on the apical half and bear long white hair. The hypopygium has the centre raised, smooth, and shining, except for some punctures, this raised central part becoming gradually narrowed to the apex, which ends in a point; there is a distinct furrow down the outer edge; the sides are covered with long pale hair. The wings are uniformly fuscous, with a faint violaceous tinge. The radial cellule extends beyond the apex of the third cubital, and it is moderately wide; the first abscissa of the radius is straight and sharply oblique, the apical one being about one fourth longer than it and slightly curved. The first transverse cubital nervure is oblique and a little curved, the second is perpendicular and slightly curved, and the third is angled at the middle. The first recurrent nervure is received close to the middle, the second at a greater distance from it; the third cubital cellule at the bottom is a little longer than it is at the top. The transverse median is received shortly in front of the basal. The legs are covered with long white hair; the tarsal spines are fulvous.

27. **Mutilla osberti.**

Long. 13 millim. ♂.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Head coarsely punctured, thickly covered with greyish-silvery pubescence, more sparsely on the vertex, which bears also long fuscous hair; the clypeus shining, impunctate, glabrous, the apex depressed and rounded; the mandibles entirely black. The eyes large, the head roundly narrowed behind them. The scape of the antennæ punctured, sparsely covered with white hair; from the middle it becomes gradually dilated to the apex, the apex being almost keeled on the underside and impunctate; the flagellum with a dull pile; the third and fourth joints equal in length. The pronotum

coarsely punctured; the sides in front rounded, behind almost oblique to the middle, which is bluntly rounded. The mesonotum with large, elongated, roundish punctures, which almost form reticulations; its hair rather thick and fuscous in colour. The scutellum broadly and moderately convex, coarsely punctured, and covered with long fuscous hair. The tegulæ are large, broad, projecting behind; the base glabrous, the apex thickly covered with dull silvery hair. The median segment has a gradually rounded slope to the apex; reticulated, the reticulations large and roundish; the central area elongated, reaching beyond the middle; the sides curved at the middle and at the apex; the base has a whitish depressed pubescence; the sides have long silvery white hair. The propleuræ excavated, at the base irregularly striolated; the central part of the mesopleuræ is covered with large shallow punctures and with silvery pubescence; the base of the metapleuræ impunctate, the rest reticulated. The basal segment of the abdomen with large punctures, and covered with long white hair; the second segment with scattered punctures; the other segments more closely punctured, except at the base, and fringed with fiery-ferruginous hair. The pygidium punctured, covered with pale fulvous hair; the apex in the middle at the top and bottom terminates in stout teeth, the space between them being roundly incised; the sides towards the apex are keeled and terminate in an indistinct tooth. The first ventral segment is flattened at the base, raised at the apex, and in the centre are several keels; the apex is punctured; the central keel is depressed in the middle. The second ventral segment is rather strongly punctured, except at the apex. The hypopygium is rather strongly punctured. Legs thickly covered with white hair. Wings fuscous; the apex much deeper-coloured than the basal portion. The radial cellule not reaching beyond the apex of the third cubital cellule, wide; the first abscissa of the radius straight, oblique, shorter than the third, which is curved; the first cubital cellule is longer than the second; the first transverse cubital nervure is oblique and with a slight curve, the second roundly curved, the third very sharply angled above the middle; the first recurrent nervure is received a little beyond the middle, the second almost in the apical fourth; the transverse median nervure is received in front of the basal.

This species may be easily known from all the others here described by the scape of the antennæ being dilated broadly at the apex, and by the middle of the pygidium being incised laterally and ending at the top and bottom in teeth.

28. **Mutilla ærolla.**

Long. 15 millim. ♂.

Hab. Mexico, Dos Arroyos in Guerrero (*H. H. Smith*).

Head coarsely punctured, covered with golden pubescence, more sparsely in the centre of the vertex, which bears long fuscous hair; the apex of the clypeus projecting, the sides oblique, the centre with five indistinct tubercles, which do not project over the apex; the mandibles punctured, piceous before the apex. The eyes large, the head

not much developed behind them and roundly narrowed. The scape of the antennæ shining, sparsely punctured, and haired, grooved on the lower side, the apex ferruginous; the flagellum with a fuscous pile; the third joint, if anything, longer than the fourth. The pronotum coarsely punctured, covered with golden pubescence; the sides of the apex oblique, the middle narrow and almost transverse. The mesonotum shining, covered with large elongated punctures, and bearing dark fuscous erect hair. Scutellum coarsely punctured, moderately convex; the apex bearing long pale golden hair. The tegulæ are large and wide, and project behind; the apex piceous, and covered with pale hair. The median segment has a gradually rounded slope to the middle and an oblique slope at the apex; strongly reticulated, the base with depressed golden pubescence, the rest with rather long pale golden hair; the central area is wide, reaches to the middle, and is rounded at the apex. The propleuræ not excavated, strongly punctured, except in the middle; the mesopleuræ punctured and covered with golden pubescence; the apex of the metapleuræ reticulated and covered with pale golden hair. The first abdominal segment with widely separated punctures, except in the middle, shining, sparsely covered with pale golden hair; black, except at the extreme apex. The second segment with scattered punctures, except in the middle; the other segments more closely punctured, and covered with fiery-red hair. The pygidium punctured, covered with fulvous hair, the middle roundly keeled posteriorly, becoming broader towards the apex, which is oblique; the sides are bluntly toothed. The basal ventral segment is entirely black; the sides are punctured; the keel is impunctate, and only very slightly depressed in the middle. The second segment with scattered punctures, except in the middle towards the base; the other segments closely punctured. The hypopygium punctured; the apex transverse. The legs covered with pale fulvous hair. The wings are violaceous throughout. The radial cellule reaches to the apex of the third cubital; the basal abscissa of the radius is straight, oblique, and shorter than the third, which is curved; the first cubital cellule is longer than the second; the first recurrent nervure is received shortly beyond the middle, the second in the apical fourth of the cellule; the third transverse cubital nervure is angled below the middle; the top of the third cubital cellule is a little more in length than the space bounded by the second recurrent and the third transverse cubital nervures.

The golden colour of the hair on the head and thorax and the crenulated apex of the clypeus are characteristic of this species.

29. **Mutilla ardens.**

Mutilla ardens, Gerst. Archiv f. Naturg. xl. p. 323 [1].

Hab. Mexico [1].

30. **Mutilla fulviventris.**

Mutilla fulviventris, Gerst. Archiv f. Naturg. xl. p. 323 [1].

Hab. Mexico [1].

I am unable to recognize either this or the preceding species amongst our Mexican Mutillidæ, no mention being made of the form of the apical abdominal segment or of the clypeus. *M. ardens* has the pubescence "yellowish"; and *M. fulviventris* the scape of the antennæ "apicem versus subdilatato."

31. **Mutilla psyra.**

Long. 10 millim. ♂.

Hab. Mexico, North Yucatan (*Gaumer*).

Head coarsely, rugosely punctured, sparsely covered with short pale hair, more thickly on either side of the base of the antennæ; the part over the clypeus projecting, smooth, shining, and glabrous, the apex rounded; the mandibles entirely black. The scape of the antennæ grooved on the inner side, shining, and bearing a few hairs; the flagellum brownish on the lower side towards the apex; the third joint thinner and distinctly longer than the fourth. The pronotum sparsely covered with dull silvery hair, and marked with large, deep punctures, the apex broadly rounded in the middle; the mesonotum coarsely punctured, sparsely covered with short fuscous hair; the scutellum moderately convex, coarsely punctured, narrowed slightly and depressed towards the apex, where it bears long white hair, the transverse depression at its base wide and deep. The median segment has a gradually rounded slope to the apex; coarsely reticulated, sparsely covered with pale hair, the base being without the usual patch of depressed pubescence; the median area curved inwardly before and behind the middle; the apex rounded, the reticulations on either side of it longer than usual. The propleuræ reticulated, except behind and in front; the mesopleuræ with large deep punctures, and covered with silvery hair; the metapleuræ reticulated, except in front and on an oblique stripe down below the middle. The tegulæ are large, shining, and glabrous. The basal segment of the abdomen is black, except at the apex; it has large, round, scattered punctures, except in the middle at the apex, and is very sparsely covered with short white hairs. The second segment is depressed at its junction with the first; it is rather strongly punctured, except in the middle towards the apex, the punctures being larger towards the base. The other segments are finely punctured, except at the apex, and are fringed with fiery-ferruginous hair. The pygidium is strongly punctured and covered with fuscous or pale hair; the middle towards the apex is raised and ends in a blunt tooth, from which a keel runs down to the bottom, the apex being oblique; the sides from about the middle are bluntly keeled. The first ventral segment has the keel a little depressed in the middle, and it is not dilated at the base; the segment behind it is transverse, and has two elongated large foveæ, closely united. The second ventral segment has large, elongated, widely separated punctures. The other segments are finely punctured and fringed with long pale hair. From the middle of the hypopygium run two stout curved keels, which converge towards the apex, this part being transverse. The wings

are fuscous, with a slight violaceous tinge. The radial cellule is moderately wide, and hardly reaches to the apex of the third cubital cellule; the first abscissa of the radius is slightly, the apical abscissa roundly, curved. The first transverse cubital nervure is oblique and hardly curved; the second is roundly curved in the middle; the third is sharply angled a little above the middle. Both the recurrent nervures are received shortly beyond the middle of their respective cellules. The third cubital cellule is wide and at the top is only slightly narrower than it is at the bottom. The transverse median nervure is almost interstitial.

M. psyra has the head and thorax less pilose than in any of the other species I have described.

32. **Mutilla orthona.** (Tab. XIII. fig. 26, ♂ organ.)

Long. 8 millim. ♂.

Hab. Panama, San Feliz in Chiriqui (*Champion*).

Head, if anything, narrower than the thorax, apparently coarsely punctured, the sculpture hidden by a thick covering of silvery hair; the clypeus shining, glabrous, the apex broadly rounded; the tips of the mandibles ferruginous. The eyes reaching to the top of the head; the head not much developed behind them, and roundly narrowed. The scape of the antennæ shining, and with a few punctures and hairs; the flagellum with a dull microscopic pile; the third joint a little longer than the fourth. The pronotum punctured, the apex with a dense band of dull silvery hair; at the apex it is oval. The mesonotum coarsely punctured, and sparsely covered with dull ferruginous hair; the scutellum coriaceous, and covered with long white hair. The tegulæ large, the basal half smooth and glabrous, the apical half densely covered with long white hair. The median segment coarsely reticulated, the base in the middle with dense white pubescence; at the base there is a central area, rounded at the apex, and this is bordered by another area on either side, these having the apex lanceolate—they join the central area obliquely, and do not reach its apex. The mesopleuræ are densely covered with silvery hair, hiding the sculpture; the metapleuræ are reticulated. The basal segment of the abdomen is black, except at the apex; it bears large punctures and long white hair; the basal teeth are stout, conical. The second segment has some punctures at the sides towards the base. The other segments are slightly punctured at the base, and are fringed with long fiery-red hair. The pygidium is punctured at the base; the apex in the middle has a stout tooth; there is a keel at the sides towards the apex; the hair is long and thick. The basal ventral segment is thickened in the middle throughout and hardly depressed; the second segment has some large widely separated punctures; the other segments are more finely punctured at the base. The hypopygium is depressed in the middle at the apex. The legs are covered with silvery hair; the calcaria are

white, the tarsal spines ferruginous. The wings are fuscous, and with fuscous nervures. The radial cellule hardly reaches to the apex of the third cubital; the first abscissa of the radius is oblique, straight, and shorter than the apical, which is curved at the termination. The second cubital cellule is as long as the first, and is dilated at the apex; the top is hardly so long as the part bounded by the first transverse cubital and the first recurrent nervures; the third cubital cellule is sharply angled in the middle at the apex, the top not half the length of the bottom. The first recurrent nervure is received a little beyond the middle of the cellule; the second is almost interstitial. The transverse median nervure is received distinctly before the basal.

33. **Mutilla ordinaria.**

Mutilla ordinaria, Smith, Descr. of New Species of Hymen. p. 225 (1879)[1]; Blake, Trans. Am. Ent. Soc. xiii. p. 204[2].

Hab. Mexico, Orizaba[1].

I am unable to recognize this species from the description. Smith neither mentions the form of the eyes nor of the basal segment of the abdomen, and it might, so far as the description goes, be a *Sphærophthalma*; but Blake[2] places it in this section of *Mutilla*. The basal segment of the abdomen is black; the median segment has "large shallow punctures."

†† *The basal segment of the abdomen ferruginous.* (Species 34–38.)

34. **Mutilla thura.** (Tab. XIII. fig. 19, ♂ organ.)

Long. 10 millim. ♂.

Hab. Panama (*Boucard*).

Head hardly so wide as the thorax, shining, the vertex sparsely, the rest thickly covered with silvery hair; the vertex with moderately large, distinctly separated punctures; the clypeus shining, the apex with three rather broad teeth; the mandibles entirely black. The scape of the antennæ rather closely covered with silvery hair; the flagellum stout, the joints closely united and covered with a dull microscopic pile; the third and fourth joints subequal. The pronotum punctured; the apex hardly oval, the sides being oblique; the band of hair broad and thick. The mesonotum covered with elongated punctures, and having also two furrows down the centre; the hair blackish. The scutellum moderately convex, the punctures large, the hair sparse and whitish. The median segment has a gradually rounded slope to the apex; it is shining and irregularly reticulated, the reticulations larger at the base, which is covered densely with silvery pubescence; the central area is larger and wider than usual, its apex rounded. The propleuræ punctured at the base; the mesopleuræ punctured in the middle and densely covered with silvery hair; the metapleuræ reticulated at the apex. The basal abdominal segment is sparsely punctured and is entirely ferruginous, except

the teeth, which are black and very stout. The second segment sparsely punctured; the other segments more finely and closely punctured at the base, and fringed with long fiery-ferruginous hair (the apical segment is missing). The basal ventral segment is ferruginous, the keel extends to the apex and is triangular at the base; the other segments have scattered punctures. The legs covered with white hair; the tarsi reddish, densely covered with white hair, their spines reddish. The radial nervure hardly reaches the apex of the third cubital cellule; the basal abscissa of the radius straight, oblique, a little shorter than the apical, which is roundly curved. The second cubital cellule is shorter than the third and is slightly dilated in the middle; the recurrent nervure is received nearly in the middle. The third cubital cellule is angled above the middle; the top equals in length the space bounded by the second transverse cubital and second recurrent nervures, the latter being received in the apical third of the cellule. The basal nervure is almost interstitial.

M. thura may be known from *M. chroma* and *M. orthona* by the hair on the vertex being much less dense; also by the toothed clypeus, the much more elongated punctures on the mesonotum, and the longer and wider area on the median segment.

35. **Mutilla forreri.** (Tab. XIII. fig. 24, ♂ organ.)

Long. 8–12 millim. ♂.

Hab. Mexico, Presidio de Mazatlan, Ventanas in Durango (*Forrer*).

Head narrower than the thorax, densely covered with long pale fulvous pubescence, which hides the sculpture. The eyes large; the head not much narrowed behind them. The antennæ black, the scape densely covered with griseous hair; the flagellum with a sparse pile; the third joint a little longer than the fourth. The pronotum densely covered with pale fulvous pubescence, arcuate behind. The mesonotum sparsely covered with a blackish pubescence; the middle irregularly reticulated, the sides strongly punctured, a longitudinal furrow separating the two parts. The tegulæ large; the fore part broadly concave; the posterior part in the form of a rounded leaf-like expansion, raised and reddish at the margin; the mesonotum along the sides of the tegulæ deeply excavated. The scutellum broadly convex, coarsely punctured, covered with long pale fulvous hair. The median segment at the base semioblique, the apex abruptly oblique; the base densely covered with pale fulvous pubescence, hiding the sculpture; the apical region reticulated. The mesopleuræ moderately strongly punctured, densely covered with griseous hair; the metapleuræ reticulated. The basal segment of the abdomen shining, sparsely covered with long, soft, fuscous hair, marked all over with large, distinctly separated punctures; at the base are two stout, broad black teeth directed forwards. The other segments have the punctures smaller and closer, and are, at the apex, fringed with reddish-fulvous hair. The pygidium is rather strongly punctured, except an impunctate space in the middle; the sides with long reddish-fulvous hair; the extreme apex is depressed and roundly incised in the

middle; the raised part behind it has a perpendicular slope and is distinctly margined at the top, which is black. The first ventral segment is black at the base, where laterally there are some stout keels; the keel is distinct and straight, and ends in a triangular tooth. The apex of the hypopygium is roundly incised; towards the apex in the centre there is a triangular projection, ending in a blunt tooth. The legs are densely covered with pale hair; the calcaria are white. The radial cellule is very broad, and extends beyond the third cubital cellule; the basal abscissa of the radius is oblique and shorter than the apical, which is broadly elbowed in the middle. The second cubital cellule at the top is a little wider than the space bounded by the first recurrent and the second transverse cubital nervures; at the top the third cubital cellule is about half the length of the bottom, and a little longer than the space bounded by the second recurrent and the third transverse cubital nervures. The first and second transverse cubital nervures are curved, the third sharply elbowed above the middle. The transverse median nervure is received in front of the basal nervure.

This species may be known from most of the others with reddish abdomen by the basal abdominal segment not being black, the black teeth at its base stout, its apex distinctly and sharply depressed, and roundly incised in the middle. In having the base of the abdomen red and the apex of the pygidium excised it agrees with *M. chroma* (♂), but that species is smaller and more slenderly built. *M. chroma* also has the wings more lightly coloured; the first recurrent nervure received nearer the middle, so that the top of the second cubital cellule is equal to the space bounded by the first recurrent and the first transverse cubital nervures (the latter, too, being longer than the top in *M. forreri*); and the second recurrent nervure received in the middle of the cellule (in *M. forreri* beyond the middle). Structurally, they may be easily separated by the keel on the basal ventral segment in *M. chroma* abruptly projecting at the apex into a tooth; while in *M. forreri* the keel gradually raises from the base to the apex, without projecting into an upraised tooth.

36. **Mutilla chroma.** (Tab. XIII. fig. 22, ♂ organ.)

Long. 10 millim. ♂.

Hab. Mexico, Presidio de Mazatlan (*Forrer*).

Head narrower than the thorax, densely covered all over with a thick dark silvery pubescence, and on the vertex with long pale fuscous hair, the sculpture hidden by the hair; the apex of the clypeus rounded; the mandibles piceous before the apex. Behind the eyes the head is not much developed and not much narrowed. The scape of the antennæ covered with rather long silvery hair; the flagellum with a dull pile, its basal joints closely united, the third joint very slightly longer than the fourth. The pronotum punctured; its apex bluntly angulated in the middle, covered with a broad belt of silvery pubescence, the rest with longish hair. The mesonotum rather shining, coarsely, rugosely punctured, sparsely covered with blackish hair. The

scutellum slightly convex, rugosely punctured, covered with long pale hair. The median segment with a gradually rounded slope to the apex, reticulated; the base with a dense band of silvery pubescence, the rest with pale fuscous hair. The propleuræ deeply excavated, the base and apex with stout striæ; the mesopleuræ with scattered punctures, and covered with whitish hair; the apex of the metapleuræ reticulated. The tegulæ are large, covered with silvery pubescence, but more densely at the apex, which is piceous. The basal segment of the abdomen is entirely ferruginous, except the stout teeth, which are black; it has scattered punctures and a sparse covering of white hair. The second and following segments have scattered punctures, and at the apex are fringed with fiery-ferruginous hair. The pygidium is more strongly punctured than the other segments; there is an indistinct broad keel down the middle, terminating in a distinct transverse keel, from which the apex sinks almost perpendicularly, this part being also keeled, the extreme apex projecting; at the apex it is covered with long white hair. The middle of the basal ventral segment is black; the base of the keel is triangular, the apex projecting upwards. The second segment is almost impunctate, except a depressed transverse line of large punctures at the apex. The other segments are finely punctured at the apex, and fringed with silvery hair. The hypopygium is almost transversely margined at the apex, and is without any peculiarity. The wings are fuscous, but not deeply. The radial cellule is wide; the basal and apical abscissæ are both curved, the latter a little shorter than the former. The first cubital cellule is longer than the second, which at the top is not much longer than the space bounded by the second transverse cubital and the first recurrent nervures. The third transverse cubital nervure is sharply angled in the middle; at the top the third cubital is about the length of the space bounded by the second recurrent and the third transverse cubital nervures. The basal nervure is subinterstitial.

37. **Mutilla prema.**

Long. 12 millim. ♂.

Hab. Mexico, Acaguizotla in Guerrero 3500 feet (*H. H. Smith*).

Head narrower than the thorax, coarsely punctured, moderately well developed behind the eyes and roundly narrowed there; the vertex covered with long fuscous hair, the other parts with dense silvery pubescence, which has a faint fulvous tinge; the part above the clypeus oblique; the clypeus slightly incurved at the apex, the sides oblique; the mandibles towards the apex rufous, the base punctured and covered with pale fulvous hair. The scape of the antennæ densely covered with white hair, the apex oblique; the base of the second joint also obliquely narrowed; the third and fourth joints subequal. The pronotum is coarsely punctured and clothed with long silvery hair, the apex with a broad dense band of pale fulvous pubescence; the sides of the apex are oblique; the middle bluntly rounded. The mesonotum shining; the hair fuscous; the punctures large, deep, mostly longer than

broad, and in great part separated from each other; down the centre run two furrows. The scutellum coarsely punctured, covered all over with long greyish hair. The basal half of the median segment is rounded, the apical half obliquely truncated; coarsely reticulated, the reticulations especially large at the base, where there is a narrow patch of depressed pubescence, the rest of the segment being almost glabrous; the median area elongated, slightly contracted in the middle, the apex triangular. The fore part of the propleuræ is strongly punctured; the part behind this striolated, the apex aciculated, these portions being depressed. The mesopleuræ are moderately strongly punctured and covered with silvery pubescence. The apex of the metapleuræ is reticulated; the other parts broadly depressed and aciculated; an oblique row of punctures in the centre. The first segment of the abdomen only black at the extreme base; strongly punctured, especially towards the apex, and sparsely covered with long silvery hair; the teeth stout, bluntly pointed. The second segment moderately covered with shallow punctures, and bearing short white hair; the apex fringed with fiery-red hair. The other segments are closely punctured. The pygidium punctured, and covered with ferruginous, and in the centre with longer pale, hair; in the middle at the apex is a shining space, which is triangular and keeled at the end, and from the point of this triangle a stouter keel runs down to the bottom; the sides are indistinctly keeled towards the apex. The first ventral segment is narrowed at the base; then it becomes dilated, the apex of this dilated part having two elongated foveæ, extending from the middle to the sides; the keel is gradually depressed from the base to the apex, but the depression is better marked on the basal portion; the sides are depressed and bear some large punctures; the apex obliquely truncated. The second ventral segment has scattered punctures and a row of punctures across the apex; the other segments are punctured at the apex and fringed with pale hair. The hypopygium has two pairs of somewhat triangular teeth, the apical pair being the longer of the two. The wings have the apical half darker than the basal half. The radial cellule is wide; the apical abscissa of the radius is curved, the apex almost straight, and it is about one half longer than the basal abscissa. The first cubital cellule is not much longer than the second. The first transverse cubital nervure is curved, oblique, the second roundly curved, the third acutely angled above the middle; the recurrent nervures are received about the same relative distance beyond the middle of the cellule. At the top the third cubital cellule is a little less in length than the distance bounded by the second transverse cubital and the second recurrent nervures. The transverse median nervure is received in front of the basal.

This insect is more nearly allied to *M. vanduara* than to any other *Mutilla* known to me; but in that species the apex of the central part of the propleuræ is not depressed nor striolate, the median segment has more hair, the head and body are generally more pilose, and the hypopygium has (instead of two pairs of flattened teeth) a continuous keel, raised at the base, between which and near the apex are two flat curved teeth.

38. **Mutilla mazatlanæ.**

Long. 11 millim. ♂.

Hab. Mexico, Presidio de Mazatlan (*Forrer*).

Head, at least on the vertex, coarsely punctured, densely covered with a dull silvery pubescence; the clypeus shining, glabrous, the apex rounded and margined. The eyes large; the head not much developed behind them, and roundly narrowed; the mandibles dull piceous before the apex. The scape of the antennæ is of equal width throughout, grooved on the inner side above, sparsely covered with silvery hair; the flagellum stout, covered with a dull pile, the basal joints closely united, the third and fourth joints equal in length. The pronotum with large, round punctures, covered with a dense silvery pubescence; the apex broadly rounded. The mesonotum shining; the punctures close together and mostly elongate; the hair silvery, thick along the sides. The scutellum only very moderately convex, punctured like the mesonotum, and covered with long pale hair. The median segment with a gradually rounded slope to the apex, reticulated; the base with a belt of depressed silvery pubescence, the other parts covered with long pale hair; the median area elongate, slightly and gradually narrowed to the apex, which is rounded. The tegulæ are large, broad, developed behind; the base with a few pale hairs; the apical half piceous. The propleuræ have a somewhat triangular, large, slightly excavated, shagreened area behind; the mesopleuræ are punctured rather strongly, except at the base and apex; the metapleuræ are reticulated, the base only slightly compared to the apex, and there is an impunctate curved belt near the base. The basal segment of the abdomen shining, impressed with widely separated punctures, and covered with long white hair; the teeth black and stout. The second segment punctured, except in the middle; the other segments closely punctured all over, and fringed with ferruginous hair, and covered also with long white hair, this being also the case with the second segment. The pygidium is closely punctured, except a smooth, impunctate, glabrous, raised space, which extends from the basal fourth to the apex, and gradually becomes broader behind, its own apex being sharply oblique; the sides are at the apical two thirds keeled; the apex is margined, transverse. The first ventral segment is black in the middle; the raised part at the base is triangular; the keel is straight, without any depression; its apex is oblique. The second ventral segment is almost impunctate; at the apex there is a transverse depressed line, with large punctures in it. The other ventral segments are punctured, except at the base, and all bear long white hairs. The hypopygium also is covered with long white hair; and a little beyond the middle are two flattened oblique teeth, rounded at the apex. The wings are lighter coloured towards the base. The radial cellule extends very slightly beyond the apex of the third cubital and is wide; the first abscissa of the radius is a little curved, and slightly shorter than the apical abscissa, which is more distinctly curved; the first cubital cellule is not much longer

than the second; the first transverse cubital nervure is oblique and slightly curved, the second elbowed bluntly in the middle, the third sharply angled in the middle; the first recurrent nervure is received shortly beyond the middle, the second in the apical third of the cellule; the third cubital cellule at the top is about as long as the space limited by the third transverse cubital and the second recurrent nervures; the transverse median nervure is almost interstitial.

This species is perhaps nearest allied to *M. chroma*, and, like it, has the raised area on the pygidium smooth and glabrous. In *M. chroma*, however, there is no stout keel on the pygidium dividing the apex into two portions, the top, too, being keeled; while the apex (the bottom flattened part) projects considerably and is incised in the middle (which is not the case in *M. sinaloa*). In *M. chroma*, again, the teeth on the hypopygium are much longer, and might, indeed, be called keels; the tegulæ are densely covered with silvery pubescence; and the two recurrent nervures are received in the middle of the cellules.

** *Abdomen black.* (Species 39.)

39. **Mutilla nana.**

Mutilla nana, Smith, Descr. of New Species of Hymen. p. 226 [1]; Blake, Trans. Am. Ent. Soc. xiii. p. 205 [2].

Hab. Mexico, Orizaba [1].

This is a true *Mutilla*, for the eyes are described as "ovate"; but the form of the abdomen is not mentioned, so it is uncertain as to which division it belongs.

ii. *Fore wings with two cubital cellules.* (Species 40.)

40. **Mutilla terminata.**

Mutilla terminata, Smith, Descr. of New Species of Hymen. p. 225 [1]; Blake, Trans. Am. Ent. Soc. xiii. p. 205 [2].

Hab. Mexico, Oaxaca [1].

The form of the eyes is stated, but not that of the abdomen.

B. *The basal segment of the abdomen not gradually dilated to the apex, but forming a distinct petiole.* (Species 41–62.)

1. Females (the males known or not). (Species 41–51.)

The following two species have black bodies; the heads sharply narrowed behind the eyes; the thorax elongated, narrow; the median segment with a rather steep slope; and the mesonotum tuberculated.

41. **Mutilla championi.** (Tab. XIII. fig. 13, ♀.)

Nigra; vertice fulvo-hirto; abdomine argenteo-piloso, petiolo rugoso-punctato. ♀.
Long. fere 10 millim.

Hab. Panama, Bugaba 800 to 1500 feet (*Champion*).

Black; the vertex broadly, the pronotum in front densely, covered with thick silvery pubescence; two silvery ovate maculæ on the base of the second abdominal segment, and a broad interrupted silvery fascia at its apex; the other segments marked with silvery hair at the sides; the head, thorax, and abdomen covered with black hairs; the mesopleuræ in front and behind, and the median segment laterally, covered with a short silvery pubescence. The scape of the antennæ is punctured and densely covered with silvery hairs; the basal joints of the flagellum bear shorter silvery hair and the apical joints a silvery pubescence. The head is much wider than the thorax, coarsely punctured; the base of the mandibles is ferruginous. The eyes are large, oval; the head very abruptly narrowed behind them. Thorax narrow, elongated; a very slight incision near the base of the mesonotum; from the tubercles slightly narrowed towards the apex; bearing large, irregular, deep, separated punctures, except at the base of the mesopleuræ, which is smooth and glabrous; the tubercle on the mesonotum is blunt, shining, and black. The basal segment of the abdomen is longer than broad, bearing large, deep punctures; not much dilated towards the apex; the apex densely covered with silvery pubescence, the rest of it with some long, pale hairs. The second abdominal segment is wider than the thorax, coarsely punctured; the other segments are finely punctured in the middle; the apical segment is fiery-red. The second ventral segment without a keel, marked with large, distinctly separated punctures, its base, sides, middle, and apex with a dense silvery pubescence; the other ventral segments fringed with silvery hair. Legs black; the coxæ densely covered with silvery pubescence; the femora, tibiæ, and tarsi sparsely clothed with long white hair; the calcaria white; the tarsal spines ferruginous.

42. **Mutilla teapæ.** (Tab. XIII. fig. 17, ♀.)

Nigra; capite dense aureo-hirto; thorace abdomineque aureo-maculatis, petiolo argenteo-piloso. ♀.
Long. 8·5 millim.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Black; the head from near the base of the antennæ, the apex of the mesonotum, two large maculæ on the base of the second segment, and the apex of the second and following segments, covered with golden pubescence; the anal region, the pleuræ, and the sides of the median segment with silvery or dull golden pubescence; the head, thorax, and abdomen with long black hair. Head wider than the thorax, rather strongly punctured, subquadrate, retreating roundly behind the eyes, which are oval and of moderate length; the base of the mandibles ferruginous. The scape of the

antennæ punctured, covered with silvery hair; the flagellum brownish beneath, covered with golden pubescence. Thorax narrow, elongate, distinctly narrowed from the tubercles to the apex, coarsely punctured throughout; the tubercles bluntly conical, ferruginous at the apex. The abdomen longer and broader than the thorax, narrowed towards the apex. The first segment, if anything, wider than long, punctured; the base depressed, incised, produced laterally into sharp teeth; covered with a long silvery pubescence and with some long silvery hair. The second segment closely and coarsely punctured; the other segments with separated punctures, except at the base and apex. The pygidium smooth and shining; the apex ferruginous; the base densely covered with golden pubescence, the other parts with long fulvous hair. The first ventral segment produced at the base in the middle into a blunt tooth; the second segment strongly punctured; the third transversely striated at the base, the apex punctured; the other segments also punctured; the second segment with some long black hairs, the other segments fringed with golden pubescence. Legs black, sparsely covered with white hair; the calcaria white; the hair on the tarsi pale fulvous, the tarsal spines also pale fulvous.

Agrees in form with *M. championi*, but the head is covered entirely with golden pubescence, and it is also not so sharply nor so obliquely narrowed behind; the thorax has distinct patches of golden pubescence, and the black hair is denser and longer; the petiole is covered with silvery pubescence and is not coarsely punctured as in *M. championi*; the markings on the second segment are larger and golden; and the punctures on the pleuræ are much closer and smaller.

The next two species agree generally in structure with *M. teapæ* and *M. championi*, but the head is not so sharply narrowed behind the eyes; the thorax is shorter, compared to the head; and the coloration of the body is dark ferruginous, not black.

43. **Mutilla tolteca.** (Tab. XIII. fig. 14, ♀.)

Mutilla tolteca, Blake, Trans. Am. Ent. Soc. iii. p. 246 [1], and xiii. p. 197 [2].

Hab. Mexico (*Sumichrast* [1 2]), Venta de Zopilote in Guerrero 2800 feet (*H. H. Smith*).

An example (♀) from Guerrero apparently belongs to Blake's species, but it is 12 millim. long (as against 8·5 millim.); the thorax from the teeth is more abruptly contracted than is shown in Blake's figure; and the cheeks and "a patch behind each eye" are not black. The second ventral segment is described as "closely punctured": in our specimen the punctures are large and distinctly separated, while the longitudinal keel only extends to the middle. The form of the spots on the base of the second segment is also a little different in the Guerrero example. The tips of the antennæ are fuscous.

Blake, in his first paper [1], refers *M. tolteca* to his subgenus *Sphærophthalma*; in his

second [2] to *Mutilla* proper. Further, notwithstanding that its basal abdominal segment, as shown by his figure, is distinctly petiolated and not widened towards the apex, nor confluent with the second, he places it in our first section. Under these circumstances it may be as well to give a detailed description of the Guerrero specimen.

The head transverse in front and behind, largely developed behind the eyes and not narrowed there; covered all over with a dense pale golden pubescence and long pale golden hair, which hides the sculpture; the apex of the clypeus deeply and roundly incised, the angles almost tooth-like; the mandibles ferruginous, the apex broadly black. The antennæ ferruginous, the apical joints fuscous and covered with a dense pale microscopic pile; the scape punctured, sparsely haired; the third and fourth joints subequal. The thorax much narrower than the head, elongate, narrowed behind, dull ferruginous, the sides of the median segment blackish, the pronotum infuscated laterally; punctured, but not very strongly; above covered with long black hairs; in front of the tooth on the mesonotum is a patch of golden pubescence; the pleuræ covered with silvery pubescence, especially thick at the base and apex; the tooth pale yellow, flattened laterally, and with the apex rounded; the median segment elongate, and with a gradually rounded slope to the apex. Abdomen dull ferruginous; the first segment not dilated towards the apex, broader than long, the base depressed, the apex broadly covered with silvery pubescence; the second segment coarsely alutaceous above, the sides with large punctures; the base of the third segment has large, widely separated punctures, this being the case also with the fourth and fifth segments, but the punctured belt is narrower. On the base of the second segment are two somewhat oval golden maculæ; there is a similarly coloured band along the sides and apex of the same segment, but not extending all the way across; there are golden spots on the sides of the third and fourth segments, those on the latter uniting obliquely at the apex; the fifth segment has the golden marks united at the top and bottom in the middle, but with a small glabrous mark in the centre. The pygidium is punctured, and covered with golden pubescence in the centre; the sides bear long black hair. The basal ventral segment has a somewhat oval keel at the base; the second segment is strongly punctured and has a band of silvery hair at the apex; the third segment is pilose at the base, the middle finely transversely striated, the apex with a punctured belt, narrowed in the middle. The legs reddish, covered with white hair; the hind tarsi with the pubescence fulvous, that on the basal joint being very dense; the calcaria white, about one third of the length of the metatarsus.

44. **Mutilla sinaloa.**

Mutilla cinaloa, Blake, Trans. Am. Ent. Soc. iii. p. 203 [1], and xiii. p. 231 [2].

Hab. Mexico (*Sumichrast* [1 2]).

This species is doubtless a close ally of the preceding; but it differs in the thorax

not having the silvery patches, the second abdominal segment without the maculæ, and the following segments clothed with deep golden pubescence.

The following six species have the form and coloration of *M. tolteca*, but they are smaller (from 3–7 millim.); the body is dull ferruginous; the antennæ and legs are reddish; the thorax and abdomen sometimes have black markings; the head with golden or brassy pubescence; and the abdomen at the apex mostly fiery-red or golden. The annexed table will aid in their identification:—

1 (2). The apex of the median segment in the middle armed with a broad projection, which ends in a tooth . . . . . *bugabensis.*
2 (1). The apex of the median segment without a tooth or projection.
3 (8). The second abdominal segment more or less black, and without white maculæ.
4 (5). The black mark on the second segment large, triangular in shape; the thorax without black . . . . . *triangularis.*
5 (4). The black mark on the second segment not triangular; the thorax marked with black down the sides.
6 (7). The apical segments of the abdomen densely covered with golden pubescence; the third antennal joint distinctly longer than the fourth . . . . . *pantaleonæ.*
7 (6). The apical segments of the abdomen without golden pubescence; the third antennal joint not longer than the fourth . . . . . *approximata.*
8 (3). The second abdominal segment without black, and marked with two white maculæ.
9 (10). The middle of the second abdominal segment, and third entirely, punctured and densely haired . . . . . *chiriquensis.*
10 (9). The middle of the second abdominal segment, and the third entirely, not microscopically punctured, glabrous, shining . . . . . *belus.*

45. **Mutilla bugabensis.** (Tab. XIII. fig. 23, ♀.)

Long. fere 7 millim. ♀.

Hab. PANAMA, Bugaba (*Champion*).

Ferruginous; the head golden; a mark on either side of the mesonotum, a bifurcated large mark on the median segment, and some marks down the sides of the abdomen, black; the apex of the first abdominal segment, two lines down the base of the second segment, and two large marks on the apex of the latter, silvery-white; the other segments golden. Head with long fuscous hair, wider than the thorax, not much narrowed behind the eyes, which are large; the mandibles blackish at the tips. The scape of the antennæ covered with white hairs; the flagellum with a white microscopic pile. The thorax about twice the length of the head, straight to the median segment, where it becomes narrowed, coarsely punctured, sparsely covered with long fuscous hair; the base of the mesonotum with silvery pubescence, there being also a slightly golden

pubescence down the sides; the sides of the median segment with a golden pubescence, as well as the pleuræ. The median segment has an abrupt rounded slope; at the top is a projecting plate, with a tooth in its centre, and at the sides a blunt pale tooth. The pleuræ are entirely punctured. The abdomen is a little longer than the head and thorax united, bluntly narrowed towards the apex; the segments fringed with silvery pubescence; the first segment broader than long, depressed and toothed at the base, not dilated towards the apex, punctured, and bearing long white hair, and a silvery pubescence at the sides and apex; the second segment punctured at the sides; the pygidium golden, and covered with long pale fulvous hairs; the other abdominal segments with long black hairs. The tibiæ and tarsi covered with white hair; the tibial spines slender.

46. **Mutilla triangularis.** (Tab. XIII. fig. 27, ♀.)

Long. 4·5–7 millim. ♀.

Hab. Panama, Bugaba (*Champion*).

Dark ferruginous; the vertex, the sides of the mesonotum, and of the median segment broadly, and a large triangular mark on the second abdominal segment, black; the other abdominal segments covered with golden pubescence; the antennæ ferruginous, the apical joints black; the legs bright reddish-testaceous. The head closely punctured, covered with a golden-fulvous pubescence and with golden hair; the occiput and the vertex sometimes blackish; the vertex with a smooth keel running down it. The eyes large, the head obliquely narrowed behind them. The scape of the antennæ covered with fulvous hair. The thorax narrower than the head, more than twice its length, not contracted in the middle; the apex roundly narrowed behind the tubercle, which is stout, blunt, and slightly curved; moderately strongly punctured all over, the punctures shallow and distinctly separated. The basal segment of the abdomen short, broader than long, not dilated towards the apex, smooth, and bearing some long white hairs; the second segment punctured like the thorax, but, if anything, more strongly; the hair on the other segments dense, hiding the sculpture entirely; the pygidium with the golden hair longer. The legs with a sparse covering of white hair; the tibial spines slight; the calcaria white; the metatarsal hair-fringe fulvous. The hair on the head and thorax is long and sparse, and pale fulvous; on the abdomen it is thicker and shorter.

The head may be entirely golden, or with more or less black on the top; the sides of the second abdominal segment are sometimes infuscated.

47. **Mutilla pantaleonæ.** (Tab. XIII. fig. 25, ♀.)

Long. fere 7 millim. ♀.

Hab. Guatemala, Pantaleon 1700 feet (*Champion*).

Very nearly allied to *M. triangularis*, but with the head more rounded (not so straightly oblique behind the eyes); the thorax shorter compared to the head, and more distinctly roundly narrowed in front; and the second abdominal segment without the triangular black mark. Head closely punctured, of a brassy-golden colour; the hair long, sparse, and fuscous; the antennal plates ferruginous; the mandibles reddish-black at the apex. Eyes moderately large, more rounded than in *M. triangularis*. The basal half of the antennæ ferruginous, the apical half black. Thorax rather strongly and closely punctured, sparsely covered with long dark fuscous hair; the sides of the mesonotum broadly, and the greater part of the median segment, black; the sides of the thorax rounded and narrowed at the base and apex; the median segment with a gradually rounded slope; the tubercle blunt, pale yellow. Abdomen with the first segment broader than long, finely punctured, covered with white hair, not dilated towards the apex, the base depressed; the second segment coarsely punctured, sparsely covered with long fuscous hair, reddish, surrounded with black, the black again being margined (except at the base) with silvery-white, except at the middle, where the white is interrupted; the other segments densely covered with golden hair. The legs reddish, sparsely covered with white hairs; the tibial spines long and slender; the metatarsal fringe pale fulvous.

There is a keel on the vertex and front, but it is blunter and not so clearly marked as in *M. triangularis*. In the type of coloration *M. pantaleonæ* is not unlike *M. bugabensis*; but that species may be at once known from it by the plate on the median segment.

48. **Mutilla chiriquensis.** (Tab. XIII. fig. 28, ♀.)

Long. 6·5 millim. ♀.

Hab. Panama, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Very nearly allied to *M. bugabensis*, but easily known from it by the absence of the toothed plate from the top of the median segment.

Ferruginous, the head golden; the mesonotum bordered with fuscous; a bifurcated black irregular mark on the median segment; the second abdominal segment black, brownish at the apex, the base with two elongated silvery broad marks, the apex silvery-white, with a small square black mark in the centre; the other segments lined with golden pubescence. The head punctured, but not strongly, much wider than the thorax, sharply obliquely narrowed behind the eyes, which are large and reach to the top; densely covered with long golden hair. The antennæ thick, the scape with fulvous hair, the flagellum glabrous. The thorax about twice the length of the head; the sides straight and not narrowed towards the apex; uniformly punctured all over (including the mesopleuræ); the hair sparse and fuscous; the median segment with a gradually rounded slope to the apex. The first abdominal segment not dilated towards the apex, longer than broad, depressed and toothed at the base, strongly punctured,

covered with white hair; the second segment punctured, but not strongly, covered with fuscous hair; the hair on the other segments golden. The ventral segments fringed with silvery hair. Legs slender, covered with white hair; the spines weak; the calcaria white; the fringe on the metatarsus white.

49. **Mutilla belus.**

Long. 5 millim. ♀.

Hab. Panama, David in Chiriqui (*Champion*).

Head apparently punctured, but the punctuation hidden by a dense golden pubescence, intermixed with long fuscous hairs. Eyes large, not projecting much, reaching nearly to the top of the head, which is well developed behind them and narrow. The scape of the antennæ with a distinct curve, sparsely covered with silvery hair; the flagellum with an obscure pile, the third and fourth joints subequal. Thorax elongate, the sides straight, slightly narrowed towards the apex. The median segment with a gradually rounded slope; a bluntly conical yellowish tooth near its base; closely and somewhat strongly punctured all over, and bearing sparse, long, fuscous hairs. The prothorax above and laterally covered with a golden, the breast and metapleuræ with a silvery, pubescence. The abdomen longer than the head and thorax united, as broad as the head, rather strongly punctured, and bearing long blackish hair. The first segment broader than long, not dilated towards the apex, depressed at the base, the sides toothed; the base bearing a few longish hairs, the rest of the segment densely covered with silvery pubescence. The second segment has two oblong marks of yellow-golden hair before the middle, the sides have a silvery pubescence, and on the apex is a belt of white pubescence, broadly interrupted in the middle. The third segment is finely punctured, and only bears some long black hairs, except in the middle, where there is a tuft of golden hair. The other segments are densely covered with long golden hair at the apex, the base of each being punctured. The pygidium is smooth, fringed round the edge with long white hair.

A small (♀) variety (?) (4 millim. in length), from Mirandilla, Guatemala (*Champion*), has the sides of the mesonotum broadly, and the greater part of the median segment, black; the hair on the head not so brightly golden in tint; the second abdominal segment blackish, but with the yellow marks and lines as in the type; the third and following segments densely covered with golden pubescence, the third segment with a black mark in the centre; and the pygidium densely covered with golden hair.

A specimen (♀) (4 millim. in length) from Bugaba, Chiriqui (*Champion*), has the thorax coloured as in the preceding, except that the black extends quite close to the apex of the median segment; the second segment wants the yellow spots and has a golden pubescence, the apical white line being browner and uninterrupted; the other segments are reddish, more or less suffused with fuscous, and they bear some long

fuscous hair, and at the apex a fringe of golden hair; and the pygidium is fringed with long fulvous hair at the sides.

Another example (♀) from Bugaba has the thorax and abdomen without any black; the second abdominal segment without yellow maculæ; the third and following segments less strongly pilose and more distinctly punctured; and the pygidium smooth and shining, very sparsely pilose at the base, the apex also not being so strongly haired as in the other varieties.

As I can find no structural differences between all these forms, I have no doubt that they all belong to one species.

✓ 50. **Mutilla approximata.**

Long. 5 millim. ♀.

Hab. PANAMA, Bugaba, 800 to 1500 feet (*Champion*).

Head much wider than the thorax, coarsely punctured, densely covered with golden pubescence, and with some long blackish hairs; the mandibles yellowish at the apex; the eyes large, reaching almost to the top of the head, which is well developed behind them and obliquely narrowed. The scape of the antennæ with a whitish pubescence; the flagellum with a pale pile, blackish towards the apex, the third joint distinctly shorter than the fourth. Thorax elongate, narrowed at the base and apex, the sides straight; coarsely punctured, above black, with a broad reddish band down the middle; the pleuræ blackish above. The median segment with a gradually rounded slope; the tooth at its base stout, conical, yellowish. The first segment of the abdomen wider than long, depressed at the base, the sides bluntly toothed; with a few blackish hairs. The second segment coarsely punctured, densely covered with short black hairs; blackish above, and with a large, round, red mark in the centre, the apex reddish, and with sparse golden hair. The third, fourth, and fifth segments at the base are glabrous, transversely striated; the apices strongly punctured, and with a golden pubescence and some long blackish hairs. The femora and tarsi are sparsely haired; the tarsi densely covered with pale fulvous hair.

This species is allied to *M. belus*, but may be known from it by the eyes reaching to the top of the head (which is not the case with *M. belus*), the head, too, retreating more sharply and more obliquely behind them, and without a curve; and by the third joint of the antennæ being shorter than the fourth.

M. pantaleonæ agrees with *M. approximata* in general form and coloration, and in the eyes reaching to the top of the head; but it has the third joint of the antennæ not shorter than the fourth; the head behind the eyes rounded (not straightly oblique); and the third, fourth, and fifth segments not striated and punctured, and covered all over with a dense golden pubescence.

The next species is perhaps best placed here; we have not received a specimen of it:—

51. **Mutilla yucatana.**

Mutilla yucatana, Blake, Trans. Am. Ent. Soc. iii. p. 203 [1], and xiii. p. 231 [2].

Hab. Mexico (*Sumichrast* [1 2]).

This species has the head fuscous, the abdomen with the disc dark ferruginous and the sides fuscous.

2. Males, of which the females are unknown. (Species 52–62.)

* *The median segment laterally terminating in long stout spines; the apex of the scutellum spined at the side.* (Species 52.)

52. **Mutilla odontophora.** (Tab. XIII. figg. 30, ♂; 31, ♂ organ.)

Long. 14 millim. ♂.

Hab. Panama, Bugaba 800 to 1500 feet (*Champion*).

Head very coarsely and strongly punctured, shining, the vertex with some fuscous hairs; a dense tuft of silvery-white hair over the base of the antennæ; the clypeus bearing long silvery hair; down from the antennæ run two stout keels, which continue nearly parallel to the middle and then become widely divergent; the cheeks slightly incised at the apex laterally; the mandibles piceous before the apex. The eyes are large and reach quite close to the top of the head. The scape of the antennæ punctured, grooved on the inner side, sparsely pilose; the flagellum with a microscopic fuscous pubescence; the third joint distinctly longer than the fourth. The thorax not much wider in the middle than the head, very coarsely and strongly punctured; the punctures on the mesonotum running into reticulations, some of them being very long and wide. The pleuræ very coarsely punctured. The pronotum with the sides wide, slightly oblique, at the base very slightly projecting. The scutellum obliquely projecting, bearing some large and deep punctures, and with a smooth channel down the centre; the apex in the middle slightly projecting, impunctate and raised; the sides projecting into stout, somewhat triangular teeth. The median segment with a gradually rounded slope to the apex, densely covered with silvery pubescence; at the base in the middle is a **V**-shaped area, from which runs a keel to the apex of the segment; the sides are smooth, and deeply and widely grooved to a little beyond the middle above, projecting into large stout teeth, which reach to the basal third of the petiole. The mesopleuræ bear a sparse whitish pubescence, and project in the middle into a large, stout, somewhat triangular tooth. The petiole is longer than broad, the base depressed and projecting into blunt teeth; densely covered with silvery-white pubescence. The second and following segments are smooth and shining, very minutely punctured, the

punctures widely separated; the apical three segments are keeled down the centre. The pygidium is more strongly punctured than the rest of the abdomen, more particularly towards the apex, and bears some long pale hairs. The second ventral segment is strongly punctured; the other ventral segments with the punctures weaker and more widely apart.

** *The median segment and the scutellum not spined.* (Species 53–62.)

† *The scutellum gibbous.* (Species 53.)

53. **Mutilla culta.** (Tab. XIII. figg. 15, ♂; 16, ♂ organ.)

Long. 13–14 millim. ♂.

Hab. MEXICO, Tabasco (*H. H. Smith*).

Head densely covered with griseous hair, more sparsely on the top; coarsely, rugosely punctured, retreating behind the eyes, which are large. The scape of the antennæ covered with white hair; the flagellum with a dull pubescence; the third and fourth joints subequal. Thorax coarsely, rugosely punctured, the punctures running into reticulations; the posterior margin of the pronotum shining, impunctate, its base transverse, the sides projecting into conical protuberances. The scutellum depressed at the base, stoutly gibbous. The median segment at the apex above projecting into a triangular broad tooth; the sides above bituberculate at the base, below reticulated. The tegulæ large, irregularly punctured, except at the apex, which projects backwards considerably; the mesonotum along the tegulæ depressed. The pro- and mesopleuræ and the scutellum have a blackish pubescence; the median segment, except in the middle (down from the middle tooth), is densely covered with white hair; the mesopleuræ are also densely covered with white hair. The first segment of the abdomen about twice longer than broad, not dilated towards the apex; the base obliquely truncated, without hair; the remainder of the petiole densely covered with white hair. The second abdominal segment shining, bearing all over roundish, widely separated, shallow punctures; its apex with a wide dense band of white pubescence. The other segments are much less strongly and sparsely punctured, except the pygidium, which bears long white hair. The second ventral segment rather strongly punctured, and with a narrow band of white pubescence at the apex; the other ventral segments bear a few long white hairs. The femora sparsely, the tibiæ and tarsi densely, covered with white hair; the calcaria white. The basal abscissa of the radial nervure is a little curved, and about twice the length of the apical, which is straight and oblique. The first and second transverse cubital nervures are slightly curved; the third is faint and broken off about the middle, so that there are practically only two cubital cellules. The first recurrent nervure is received beyond the middle of the cellule; the transverse median nervure is not interstitial. The costal cellule is

lighter coloured than the others; and in the first and second cubital cellules runs a white line, there being also two white lines in the third cellule.

Characteristic of this species are the tuberculate edges of the pronotum, the strongly gibbose scutellum, the large tegulæ, and the tooth on the apex of the median segment.

†† *The scutellum not gibbous; the median segment not tuberculate in the middle.*
(Species 54–62.)

‡ *The abdominal segments* 3–6 *clothed with golden pubescence.*
(Species 54 and 55.)

1 (2). The median segment thickly covered all over with a dense silvery pubescence, and with a stout tubercle in the middle; the wings extending beyond the apex of the abdomen . . . . . *pomona.*

2 (1). The median segment with silvery pubescence at the base only, and without a distinct tubercle; the wings not extending to the apex of the abdomen . *megæra.*

54. **Mutilla pomona.** (Tab. XIII. fig. 29, ♂.)

Long. 12 millim. ♂.

Hab. Mexico, Dos Arroyos and Rio Papagaio, both in Guerrero (*H. H. Smith*), Temax in North Yucatan (*Gaumer*).

Head and thorax densely covered with a longish griseous pubescence. The head a little narrower than the thorax, the sculpture hidden by the pubescence; the mandibles punctured, ferruginous before the apex. The eyes large, the head roundly narrowed behind them. The pronotum apparently punctured, the punctuation hidden by the dense pubescence; the mesonotum with large, deep, irregular punctures, and with two short furrows on either side, the inner one irregular. The scutellum broadly convex, strongly punctured. The median segment with the upper half oblique, the lower half semiperpendicular; the sides, looked at from above, bulging out obliquely and with a bluntly conical tooth at the base above; strongly punctured and very densely pilose. The mesopleuræ rather strongly punctured and densely pilose; the metapleuræ still more strongly punctured, but only sparsely pilose. The first segment of the abdomen wider than long, not dilated towards the apex, depressed at the base, covered with long griseous hair. The second segment shining, the base and sides with depressed pale fulvous hairs; the apex broadly, and all the following segments densely, covered with fulvous hair. The pygidium punctured at the base. The first ventral segment keeled all down; the second strongly punctured; the other segments punctured in the middle and sparsely pilose. The hypopygium pale yellow and covered with long pale hairs. The legs densely covered with pale hair; the calcaria white. The basal abscissa of the radius is oblique, and is about one fourth longer than the apical abscissa, which is curved; the second cubital cellule at the top is about the length of the space bounded by the first recurrent and the second transverse cubital nervures; the third cellule at the

top is nearly one fourth longer than it is at the bottom; the third transverse cubital nervure bulges out into a sharp angle in the middle, from which runs a nervure halfway across. The first recurrent nervure is received in the apical third, the second beyond the apical fourth of the cellule.

55. **Mutilla megæra.**

Long. 8 millim. ♂.

Hab. Mexico, Hacienda de la Imagen in Guerrero 4000 feet (*H. H. Smith*).

The head coarsely rugosely punctured; below the ocelli covered (but not very thickly) with long white hairs. The eyes distinctly oval, with the incision wide; the head not much narrowed behind them. The scape of the antennæ bearing white hair and punctured; the flagellum covered with a fuscous pubescence; the third and fourth joints subequal. The thorax very coarsely, rugosely punctured; the base of the prothorax transverse, the edges slightly projecting. The tegulæ are moderately large, do not project behind, and are ridged at the sides; the mesonotum at their base is widely and deeply depressed. The median segment short, irregularly and widely reticulated; at the base in the centre is a **V**-shaped depression; the apex is sharply oblique. The pleuræ are coarsely, rugosely punctured. The entire thorax is covered (but not thickly) with white hair, which is longer on the median segment than elsewhere. The first segment of the abdomen is wider than long, short, coarsely punctured; the base depressed, the sides projecting; covered sparsely with white hair. The second segment is strongly punctured; its apex, and also that of the following segments, fringed broadly and densely with golden-fulvous hair. The pygidium rather strongly punctured, and only bearing a few white hairs towards the apex. The tibiæ and tarsi densely covered with white hair; the calcaria white. The basal and apical abscissæ of the radial nervure about equal in length; their base not much wider than the apex. The base of the radial cellule is a little wider than the apex; the second cubital cellule at the top is about the length of the space bounded by the first recurrent and the second transverse cubital nervures; the first and second recurrent nervures are received in the apical third of the cellules. The third cubital cellule is narrower at the bottom than at the top.

‡‡ *The abdominal segments with silvery pubescence; the pubescence on the second segment forming a belt, that on the other segments sparse.* (Species 56–62.)

The five species I have here described as new may be separated as follows:—

1 (8). The tegulæ not keeled.
2 (3). The base of the pronotum rounded . . . . . *blakei.*
3 (2). The base of the pronotum transverse.
4 (5). The hypopygium white; the centre of the clypeus not raised, and thickly covered with hair . . . . . *astuta.*

5 (4). The hypopygium black; the centre of the clypeus raised and grooved, not thickly covered with hair.
6 (7). The raised part of the clypeus indistinct, broad, not widened towards the apex . . . . . *herberti.*
7 (6). The raised part of the clypeus distinctly raised, wedge-shaped, widest at the apex . . . . . *catriona.*
8 (1). The tegulæ keeled . . . . . *idiasta.*

56. **Mutilla sapiens.**

Mutilla sapiens, Smith, Descr. of New Species of Hymen. p. 225 (♂) (1879)[1].

Hab. Mexico, Orizaba[1].

It is obvious that this species is nearly related to the next, *M. herberti*, but the description is not very complete; the tegulæ are described as testaceous at their tips, and the wings hyaline, faintly clouded at their apical margin. It belongs to this division, for Smith says that the basal segment of the abdomen forms a short petiole.

57. **Mutilla herberti.** (Tab. XIII. figg. 32, ♂; 33, ♂ organ.)

Long. 10–11 millim. ♂.

Hab. Mexico, Omilteme 8000 feet, and Chilpancingo 4600 feet, both in Guerrero (*H. H. Smith*).

The antennæ have the scape densely covered with silvery hair, the flagellum with a darker pubescence; the third joint a little longer than the fourth. The head appears to be punctured, but the punctuation is hidden by the dense silvery hair which covers it; the apex of the clypeus is shining, bare. The thorax is wider than the head; the pleuræ and the median segment densely covered with long silvery pubescence; the hair on the pro- and mesonotum darker, sparser, and shorter. The pronotum is truncated in front; the sides oblique, rather coarsely punctured. The mesonotum is coarsely rugosely punctured, without furrows; the scutellum coriaceous. The sculpture of the upper part of the median segment hidden by the hair; the sides with large deep punctures, almost forming reticulations. The posterior upperside of the mesopleuræ is excavated, smooth, shining. The petiole is about twice longer than wide; the base depressed, the apical three fourths densely covered with silvery hair. The second abdominal segment is closely punctured (but not coarsely, like the mesonotum), and is fringed at the apex with silvery hair. The third and fourth segments are finely punctured on their basal half, the apical half aciculated; sparsely covered with long white hairs; the apical segments closely punctured; the pygidium covered with long white hair. The ventral surface is closely and rather strongly punctured. The wings are fusco-hyaline throughout, with the nervures deep black. There are three cubital cellules: the first wider at the top than at the bottom; the second irregularly penta-

gonal, the top of the length of the lower part bounded by the first recurrent and the second transverse cubital nervures; the third large, irregular, the bottom part as long as the upper, the apex dilated in the middle. The first transverse cubital nervure straight, oblique; the bottom part of the third sinuate; the upper nervure does not reach to the apex of the wings, but the lower one does. The radial cellule is wider at the base than at the apex; the first abscissa straight, oblique, the apical abscissa curved. The transverse median nervure is interstitial. The tegulæ are moderately large, shining at the apex, not produced behind, deep black, without a ridge; in front of them is a wide, deep depression. The femora are sparsely, the tibiæ and tarsi more thickly, covered with silvery hairs; the calcaria are white.

58. **Mutilla catriona.**

Long. 9 millim. ♂.

Hab. MEXICO, Omilteme and Xautipa, both in Guerrero (*H. H. Smith*).

Head narrower than the thorax, covered all over with a dense silvery pubescence, and on the vertex with long silvery hair; the clypeus raised in the middle into a wedge-shaped projection, widest at the apex, the centre channelled; the tips of the mandibles ferruginous. Behind the eyes the head is well developed and roundly narrowed. The scape of the antennæ sparsely covered with rather long pale hair, the flagellum with a brownish pile; the third joint is, if anything, longer than the fourth. The pronotum coarsely punctured, covered with long white hair; the base transverse, the sides oblique and straight. The mesonotum and scutellum more coarsely punctured than the pronotum, covered with long white hair. The scutellum convex, rounded; the furrow at its base wide and deep; the hair not longer than that on the mesonotum. The median segment, except at the apex, densely covered with a white pubescence; the apex reticulated; the median area long and wide, tapering towards the apex. The middle of the propleuræ depressed and irregularly striolate, the top rugose; the mesopleuræ punctured and covered with white hair; the metapleuræ reticulated, except in the middle, obliquely. The tegulæ are large, wide, not keeled; obscurely punctured and haired. The petiole is twice longer than wide; the base oblique, the other parts covered with silvery pubescence. The second abdominal segment is strongly punctured, with a wide apical band of silvery pubescence. The other segments finely punctured at the apex, clothed, but not thickly, with white hair, and keeled down the centre, this being also the case with the pygidium, which is more strongly punctured than the preceding segments; the apex of the pygidium transverse. The first ventral segment is produced into a stout tooth at the base; it is slightly curved down the centre, the apex oblique. The second ventral segment is strongly punctured and sparsely covered with long hair. The other ventral segments are finely punctured at the apex; the hypopygium is more strongly punctured and black. The legs are covered with white hair;

the calcaria are white; the tarsal spines fulvous. The radial cellule is moderately wide, and does not reach the apex of the third cubital cellule. The first abscissa of the radius is longer than the apical; it is straight and oblique, the apical abscissa being rounded. The recurrent nervures are received in the apical third of the cellules. The transverse median nervure is interstitial.

M. catriona is closely allied to *M. herberti*; the latter, however, has the middle of the clypeus only indistinctly raised, the raised part also not becoming wider towards the apex; the petiole shorter and not so sharply oblique at the base; the space beneath the basal tooth wider and more deeply and widely hollowed; and the pubescence on the thorax less dense and long.

59. **Mutilla blakei.**

Long. 9 millim. ♂.

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith*).

Agrees in coloration and clothing with *M. herberti*, but differs in its smaller size, and also in the following particulars:—The pronotum is not transverse at the base, but rounded; the petiole is a little longer, and not at all dilated towards the apex; the third and fourth segments are not more punctured at the base than they are at the apex; the first cubital cellule at the top is hardly wider than it is at the bottom; the third cubital cellule at the top is longer than the space bounded by the first recurrent and the second transverse cubital nervures, wider at the top than at the bottom; the lower part of the third transverse cubital nervure is not sinuate, but sharply and distinctly geniculate in the middle; the second recurrent nervure is received shortly before the middle (not close to the apical fourth, as in *M. herberti*); the first transverse cubital nervure is slightly curved, this being also the case with the second; and the transverse median nervure is not interstitial, but received in front of the transverse basal. Head densely covered with silvery pubescence, the apex of the clypeus broadly rounded. The scape of the antennæ sharply keeled on the lower side and covered with long white hair; the flagellum at the base closely covered with short hair, the rest with a microscopic pile; the third and fourth joints subequal; the apical joint flattened laterally. The thorax wider than the head; the sides of the pronotum oblique, the base transverse, the apex rounded in the middle; coarsely punctured and covered with white hair. The mesonotum reticulated and covered with long white hair. The scutellum subconvex, coarsely coriaceous, and covered all over with long white hair. The median segment reticulated, densely covered with silvery hair. The metapleuræ reticulated at the base and apex. The first ventral segment at the base projects into a large, blunt tooth; the sides have longitudinal keels. The four apical segments of the abdomen are keeled down the middle and are covered with long white hair.

60. **Mutilla astuta.**

Long. 12 millim. ♂.

Hab. PANAMA, Volcan de Chiriqui 4000 to 6000 feet (*Champion*).

Head densely covered with griseous-white hair, which hides the sculpture. Eyes moderately large, reaching nearly to the top of the head; the head not much narrowed behind them. The scape of the antennæ densely covered with whitish hair; the flagellum with a dull microscopic pile; the third and fourth joints subequal. The thorax a little wider than the head, coarsely, rugosely punctured; the pro- and meso-notum sparsely clothed with white hair; the pleuræ densely covered with silvery-white hair; the median segment with very dense griseous hair. The pronotum at the base transverse; the sides bluntly, triangularly tuberculate. The scutellum is moderately convex. The median segment with a gradually rounded slope to the apex, and with a blunt short tubercle in the middle. The tegulæ large, punctured, not projecting behind. The petiole is a little longer than wide, not dilated towards the apex, densely covered with griseous hair, except at the base, which is oblique; above roundly convex and bluntly tuberculate at the sides. The second abdominal segment is shining, punctured all over, but not very strongly; its apex with a dense band of silvery hair, dilated in the middle. The other segments are faintly punctured, indistinctly keeled down the middle, and with long white hair. The pygidium is more coarsely punctured than the preceding segment, and with the keel distinct. The second ventral segment is more strongly punctured than the dorsal, and is covered with white hair; the other ventral segments are almost impunctate, and sparsely covered with rather long white hair; the hypopygium is whitish-yellow. The wings are violaceous. The first abscissa of the radial nervure is slightly curved, and one half longer than the apical abscissa, which is oblique. The first and second transverse cubital nervures are oblique; the top of the second cubital is of the length of the space bounded by the first recurrent and the second transverse cubital nervures; the first recurrent nervure is received in the apical third of the cellule, the second in the apical fourth; at the bottom the third cubital cellule is narrower than it is at the top; the third transverse cubital nervure bulges out in the middle. The femora are sparsely, the tibiæ and tarsi densely, covered with white hair.

This species is closely related to *M. culta*, but may be known from it by the densely haired head, the much less convex scutellum, the much smaller tooth on the median segment, on which there is no keel, the shorter petiole, the more strongly punctured pygidium, and the white hypopygium, and also by the second recurrent nervure being received much nearer the apex of the cellule.

Compared with *M. herberti*, *M. astuta* has the hair on the mesonotum shorter and sparser, the abdomen shorter and broader, the hypopygium white (not black), and the petiole differently formed—in *M. astuta* it rises sharply and obliquely at the base,

whereas in *M. herberti* it is flat at the extreme base, from which it then rises gradually and roundly.

61. **Mutilla idiasta.**

Long. 6 millim. ♂.

Hab. Mexico, Tierra Colorada 2000 feet, and Chilpancingo 4600 feet, both in Guerrero (*H. H. Smith*).

Head a little narrower than the thorax, well developed behind the eyes and obliquely narrowed there, rugosely punctured; covered with a silvery pubescence, and on the vertex with long pale hair; the clypeus projecting in the middle, and with a wide furrow down the centre, the furrow continued to the extreme apex, the sides almost forming teeth; the apical half of the mandibles ferruginous. The scape of the antennæ covered with white hair; the flagellum with a fuscous pubescence; the third joint nearly one half longer than the fourth. The prothorax transverse at the base, the apex rounded, the sides straight; coarsely punctured, covered above with silvery pubescence. The mesonotum covered with large reticulations and sparsely clothed with long glistening white hair. The scutellum also reticulated, but the reticulations are smaller and coarser, running into punctures; it bears all over long pale fulvous hair. The median segment above is covered with dense silvery pubescence, which hides the sculpture; the base has a gentle slope; the apex is sharply oblique, shining and glabrous, and has two not very distinct keels running down the centre. The propleuræ shining, glabrous, a little depressed, and with a few oblique keels; the mesopleuræ punctured and densely covered with silvery hair, except at the apex; the metapleuræ strongly reticulated behind. The tegulæ are large, the sides carinate; sparsely covered with white hair. The petiole is wider than long; at the base it is oblique, projecting into short stout teeth, the top of the truncated part being margined; the other parts are coarsely punctured and covered with silvery hair. The second abdominal segment is rather strongly punctured all over, and at the apex has a band of white pubescence; the other segments are finely punctured and fringed with white hair. The pygidium is closely punctured and covered with short white hair, and stoutly keeled down the centre; the apex is transverse. The basal ventral segment has a straight keel; the second segment is more coarsely punctured than the corresponding dorsal segment, and it is fringed with white hair at the apex; the hypopygium is white. The legs are covered with white hair; the apices of the femora ferruginous; the calcaria and spines white. The wings are fusco-hyaline. The radial cellule narrowish; the basal and apical abscissæ of the radius straight, oblique, the basal abscissa larger than the apical. The first cubital cellule shorter than the second; the third cubital cellule not reaching the apex of the radial. The first transverse cubital nervure oblique and straight; the second curves towards the first; the third is angled sharply

above the middle. The recurrent nervures are received in the apical third of the cellules; the transverse median nervure is interstitial.

A very distinct little species.

62. **Mutilla gracilis.**

Mutilla gracilis, Smith, Cat. Hymen. Ins. iii. p. 42[1]; Blake, Trans. Am. Ent. Soc. iii. p. 231[2], and xiii. p. 202[3].

Hab. North America, Texas[2 3].—Mexico[2 3].—Amazons, Pará[1].

Smith[1] does not describe the form of the eyes, nor of the petiole of this species. It is placed in this section by Blake[3], who also, as noted above, records it from Texas and Mexico; but he merely gives an abstract of Smith's description of the insect. If it really belongs to this section, it differs from *M. herberti* and *M. blakei* in having the wings hyaline, with the apical margin clouded; the tegulæ produced behind and ridged down the middle; the head covered only with a thin griseous pubescence.

SPHÆROPHTHALMA.

Sphærophthalma, Blake, Trans. Am. Ent. Soc. iii. p. 232 (1871); xiii. p. 180 (1886).

As in *Mutilla*, this genus may be conveniently split up into two sections; one having the basal segment of the abdomen gradually dilated to the apex and confluent with the base of the second; the other having it much narrower than the second and not, or hardly, dilated at the apex. The first section may be further subdivided by the form of the head, of which, as will be seen, there are three well-marked types.

So far as we can judge from the collection at our disposal and from the small number described, the males appear to be much rarer than in *Mutilla*. They are easily known from the latter by the eyes being entire.

A. *The basal segment of the abdomen gradually dilated to the apex, and confluent with the second.* (Species 1–66.)

i. *The posterior angles of the head rounded, acutely produced beneath.* (Species 1–8.)

a. *The cheeks with a large tooth on either side.* (Species 1–7.)

1. **Sphærophthalma robinsoni.**

Mutilla robinsonii, Blake, Trans. Am. Ent. Soc. iii. p. 250[1].

Sphærophthalma robinsonii, op. cit. xiii. p. 246[2].

Hab. Mexico (*Sumichrast*[1 2]).

This species appears to be closely related to the following, *S. respublicana*, but differs from it in the "cheeks below the eyes having two small bilobed tubercles, ferruginous in front, just beneath which there is a stout tooth on each side projecting behind, ferruginous at tip; below these are two others much larger, projecting beneath."

It agrees also with *S. respublicana* in the mandibles being toothed—"Mandibles stout, with a tooth about one third of their length from the tips." The pubescence on the basal segment of the abdomen is golden, not silvery as in *S. respublicana*.

2. **Sphærophthalma respublicana.** (Tab. XIV. figg. 1, ♀; 1 *a*, head from the side.)

Nigra, capite et thorace æneo-velutinis; abdominis segmento 2° ferrugineo bimaculato. ♀.
Long. 18 millim.

Hab. Mexico, Cordova, Paso del Macho (*Höge*).

Head much wider than the thorax, somewhat convex (rounded) in front, concave behind, slightly narrowed from the eyes; the hinder angles viewed from above rounded, behind bluntly keeled, the keel ending in a stout, blunt tooth; the cheeks are prolonged into stout teeth, narrowed and curved at the apex, and nearly 2 millim. in length. The head is black, the vertex covered with dense golden pubescence; the hair on the front is black; the clypeus is rounded at the apex, obscure fulvous in colour, and fringed with long fulvous hair; the outer orbits bear a sparse white pubescence and they have shallow punctures; the front is rugosely punctured. At the base of the mandibles on the lower side there is a long tooth, rounded at the apex. The scape of the antennæ is long, narrow, curved at the apex, and covered with white hair; the third joint is more than twice the length of the fourth and is shorter than the second. The thorax is broadly but shallowly narrowed; the base is rounded and is a little wider than the apex; at the base are two short blunt tubercles; the apex has a straight oblique slope. The posterior part of the propleuræ is punctured; in the middle of the mesopleuræ at the top is a comparatively deep, smooth incision; the extreme apex of the metapleuræ is stoutly striolated; the marginal teeth are minute. The thorax is black, the mesonotum with a broad band of golden pubescence dilated in the middle on either side. The basal abdominal segment is thickly covered with white pubescence. On the second segment are two large roundish orange marks; its sides and the apices of the other segments are broadly margined with pale fulvous pubescence; the pygidium is densely covered with a dense golden pubescence. The basal ventral segment is bluntly keeled throughout; the punctuation on the second segment is coarse; the other ventral segments are finely punctured and sparsely clothed with long white hair. The hair on the coxæ, femora, and tibiæ is black, that on the tarsi fulvous; the tibial spines are long, stout, and black.

3. **Sphærophthalma ravula.** (Tab. XIV. fig. 5, ♀.)

Nigra, capite et thorace aureo-velutinis; abdominis segmento 2° late ferrugineo, basi maculis tribus nigris notata. ♀.
Long. 17–18 millim.

Hab. Mexico, Amula and Acapulco in Guerrero (*H. H. Smith*).

Head wider than the thorax, somewhat convex in front, broadly concave posteriorly, very slightly dilated behind the eyes; the hinder edges bluntly acute; the lower tooth straight, narrowed gradually to the apex, which is rounded; the part from a little above the antennæ covered with dense golden pubescence and hairs, which hide the sculpture entirely; the outer orbits covered with pale fulvous hair; the clypeus punctured, and fringed with long pale fulvous hair; the mandibles black, at the base covered with long fulvous hair. The scape of the antennæ covered with golden hair; the third joint is more than double the length of the fourth, which is shorter than the second. The thorax is a little longer than the head; the base is rounded; the sides next the head are oblique, straight, and end in a blunt, triangular, short tooth, then straight for a short distance, and then curved inwardly and narrowed, becoming a little broader again towards the apex, but still narrower than the basal part; the apex has an oblique slope. The apical part of the propleuræ is strongly punctured; there is a striolated band near the middle of the mesopleuræ; the metapleuræ are reticulated. Above, the thorax is clothed with bright golden pubescence, except a large semicircular black mark at the base, and the median segment, except the centre, which is black, the golden part on the median segment becoming narrowed to a point at the bottom. The median segment bears long white hair. The basal abdominal segment is covered with long white hair, which is particularly thick at the sides; the second segment is golden, except at the base, where it is black, and from it projects in the centre a cup-shaped black mark, the black being also continued down the sides to near the middle; the apex is broadly black, the black projecting somewhat triangularly in the middle. The sides of the second and the third to the fifth segments (the latter at the sides only) are covered with pale fulvous hair. The pygidium is finely rugose and piceous in the centre; at the base it is covered with thick golden hair; the sides have a few long pale fuscous hairs. The apex of the basal ventral segment is broad in the middle and not keeled; the second segment is strongly punctured and covered all over somewhat thickly with fulvous hair; the other segments are finely and closely punctured at the apex, and finely transversely shagreened at the base, the apex bearing dull fulvous hair; the last segment is thickly covered with long fulvous hair. The legs are thickly covered with white hair; the tibial and tarsal spines are ferruginous. The form of the central black mark on the base of the abdomen varies—it may be square, rounded, or transverse, or incised at the apex; the size of the black mark on the base of the thorax varies also. There is likewise a slight variation in the form of the sides of the thorax, and the colour of the hair on the head varies from very bright to pale golden.

✓4. **Sphærophthalma jocularis.** (Tab. XIV. fig. 3, ♀.)

Læte ferruginea; abdomine nigro, segmento 2° late ferrugineo. ♀.

Long. 13–14 millim.

Hab. Mexico, Amula in Guerrero 6000 feet (*H. H. Smith*).

Head wider than the thorax, almost transverse in front, behind rather deeply concave, very slightly dilated from the eyes onwards; the posterior angles narrowly rounded, the edges bluntly keeled and ending beneath in a long, stout, curved tooth; the oral region is black, and covered with long white hair; the hair on the rest of the head is also white, but shorter; the mandibles are rufous at the base; the punctuation is moderately strong. The scape of the antennæ is sparsely covered with long pale fuscous hair; the third joint is nearly three times longer than the fourth, which is of the length of the first; the middle joints are brownish beneath. The thorax is ferruginous above; it bears a bright golden pubescence; the base is broadly rounded; the basal third is dilated, margined; the apex with an oblique slope and bearing long white hair, the hinder region of the propleuræ margined, narrowed at the bottom, and bearing large, widely separated punctures; the mesopleuræ shining, impunctate, glabrous; the apex of the metapleuræ obliquely striolate. The basal abdominal segment black, covered with long white hair; the second segment black at the base and apex, the centre with bright golden pubescence, the base and apex with long black hair, the sides with silvery pubescence; the third to the fifth segments covered with pale fulvous hair, except the centre of the fifth, which is clothed with black hair; the pygidium is covered with black and golden hair. The apical half of the basal ventral segment is keeled, the apex being oblique and piceous in colour; the second segment is strongly punctured; the other segments are finely and closely punctured, and covered with long pale hair. The hair on the coxæ, femora, and tibiæ is long and pale, that on the tibiæ deep golden; the tibial spines are stout and black.

Apart from the difference in coloration, the present species may be known from its allies by the spine on the head being longer, sharper, and curved, while the thorax is not incised in the middle.

5. **Sphærophthalma crœsus.**

Mutilla crœsus, Gerst. Archiv f. Natur. xl. 1, p. 57 [1].

Hab. Mexico, Jalapa [1].

I presume this species belongs to this section.

6. **Sphærophthalma huasteca.**

Mutilla capitata, Smith, Cat. Hymen. Ins. iii. p. 59 [1]; Blake, Trans. Am. Ent. Soc. iii. p. 251 (nec Lucas) [2].

Sphærophthalma capitata, Blake, Trans. Am. Ent. Soc. xiii. p. 246 [3].

Hab. Mexico [1].

A new name is required for Smith's species.

7. **Sphærophthalma quadridens.**

Mutilla quadridens, Blake, Trans. Am. Ent. Soc. vii. p. 247 [1].
Sphærophthalma quadridens, Blake, op. cit. xiii. p. 247 [2].

Hab. Panama (*Strecker* [1 2]).

b. *The cheeks not produced into teeth* (Species 8.)

8. **Sphærophthalma gabbi.**

Mutilla gabbii, Blake, Trans. Am. Ent. Soc. vii. p. 248 [1].
Sphærophthalma gabbii, Blake, op. cit. xiii. p. 247 [2].

Hab. Costa Rica (*Gabb* [1 2]).

ii. *The head carinate behind.* (Species 9–31.)

a. *The keel ending beneath in a spine or tubercle.* (Species 9, 10.)

9. **Sphærophthalma lerma.**

Mutilla lerma, Blake, Trans. Am. Ent. Soc. iii. p. 251 [1].
Sphærophthalma lerma, Blake, op. cit. xiii. p. 248 [2].

Hab. Mexico (*Sumichrast* [1 2]).

This species differs from *S. inimica* in having the head ferruginous, with golden pubescence on the vertex, and the second abdominal segment with two pale yellowish spots.

10. **Sphærophthalma blandina.**

Mutilla blandina, Smith, Descr. of New Species of Hymen. p. 227 (1879) [1].
Sphærophthalma blandina, Blake, Trans. Am. Ent. Soc. xiii. p. 257 [2].

Hab. Mexico, Orizaba [1].

I follow Blake in placing this species here, but Smith says nothing about the head being keeled.

b. *The keel beneath not ending in a spine or tubercle.* (Species 11–31.)

The first seven species of this section may be distinguished as follows:—

1 (10). The head acutely produced behind, at the top ending in a sharp point.
2 (5). The abdomen with a cross-shaped mark.
3 (4). The thorax elongate, distinctly narrowed towards the apex, the latter stoutly keeled . . . . . *inimica*.
4 (3). The thorax short, not distinctly narrowed towards the apex, laterally without keels . . . . . *beata*.

5	(2).	The abdomen with a broad band or mark.	
6	(9).	The head black; the abdomen with a golden or silvery band on the second segment.	
7	(8).	The thorax red, without teeth; the legs black	*caltha.*
8	(7).	The thorax black, stoutly toothed; the legs ferruginous	*euryclea.*
9	(6).	The head ferruginous; the second abdominal segment for the greater part golden, with a black square mark at the base.	*animosa.*
10	(1).	The head not acutely produced behind, the edges rounded.	
11	(12).	The third joint of the antennæ twice the length of the fourth	*damia.*
12	(11).	The third joint of the antennæ not much longer than the fourth . . .	*extinctor.*

11. **Sphærophthalma inimica.** (Tab. XIV. fig. 2, ♀.).

Nigra, basi antennarum, thorace pedibusque ferrugineis; abdomine albo-lineato. ♀.
Long. fere 9 millim.

Hab. PANAMA, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

The head wider than the thorax, quadrate, almost transverse in front, concave behind; the hinder angles sharply keeled, ending at the bottom in a blunt tubercle the keel above projecting obliquely a short distance on to the vertex; closely, but not very strongly, punctured, and thickly covered with short silvery-fulvous pubescence. The oral region and the mandibles ferruginous. The eyes project a little beyond the back part of the head, this being nearly twice the length of the eyes. The antennæ with the scape, the second joint, and the base of the third joint broadly, ferruginous, the rest black; the scape bare, the third joint twice the length of the fourth. The thorax is rounded at the base, contracted at the middle, the apical part narrower than the basal; the sides at the base are oblique, rough; before the middle-contraction are two stout curved teeth, the basal being the larger and thicker of the two; on the side of the median segment are five stout teeth. The upper part of the thorax is moderately coarsely punctured, and bears a short, sparse, white pubescence; the median segment has a gradually rounded slope, and is more thickly clothed with hairs than the mesonotum, the hairs, too, being longer. The pleuræ are entirely impunctate. The basal segment of the abdomen is obscurely punctured, sparsely pilose, and black; the second segment is black, with a straight line of white pubescence down the centre, there being another white line across its apex; there is an obscure white line down the centre of the third segment; the third and following segments are covered with an obscure, dull rufous, depressed, velvety pubescence, which is seen best when the insect is viewed laterally. The pygidium is distinctly punctured and sparsely covered with white hair. The basal ventral segment is ferruginous, the apex bluntly keeled, the keel more distinct and projecting at the top; the second segment has the punctures moderately large; the apical segments are ferruginous; the hypopygium is punctured; the pubescence is sparse and whitish. The legs are ferruginous throughout; the hair sparse; the calcaria white; the tibial spines are rather long, sharp, and blackish.

12. **Sphærophthalma beata.** (Tab. XIV. fig. 4, ♀.)

Long. 6 millim. ♀.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Head slightly wider than the thorax, black, thickly covered with a dull silvery pubescence, and with some rather long fuscous hairs; behind deeply and roundly concave; the keel above terminating in a short tubercle. The thorax not twice the length of the head, not much narrowed towards the apex, ferruginous, sparsely covered with long fuscous hairs; the sides not narrowed, with a small round incision at the middle only, which has a tubercle at its base; closely and rather strongly punctured; the median segment with a gradually rounded slope. The abdomen black, covered with a short stiff pile, and with long black hairs; down the centre is a straight line of white pubescence, and in the middle is a transverse line of similar pubescence; the terminal segment is smooth. The ventral segments are covered with long white hairs; the basal segment is ferruginous. The legs are ferruginous and covered with white hairs. The antennæ are black, with the four basal joints ferruginous; the third joint is nearly twice the length of the fourth.

S. beata agrees practically in coloration with *S. inimica*; but that species may be readily known from it by the thorax being longer compared to the head, and much more narrowed behind, with the base oblique (not rounded) and ending in two teeth, and the sides of the median segments stoutly spined.

13. **Sphærophthalma caltha.** (Tab. XIV. fig. 6, ♀.)

Long. 7–8 millim. ♀.

Hab. PANAMA, Volcan de Chiriqui (*Champion*).

Head a little wider than the thorax, black, rather thickly covered (especially on the front) with long white hair; broadly, but not deeply, concave behind, bluntly rounded in front; the sides ending in stout curved keels. The mandibles are ferruginous. The antennæ are rather long, entirely black; the third joint twice the length of the fourth. The thorax is ferruginous, not much longer than the head, hardly narrowed towards the apex; the base semi-oblique laterally; the middle slightly incurved, with a tubercle in the centre; the median segment with a gradually rounded slope. The abdomen black, velvety; in the centre of the second segment are two elongated, transverse, yellowish-white maculæ; the pygidium shining, minutely punctured, densely covered with a silvery-golden pubescence. The legs black, and covered with silvery pubescence.

Compared with *S. inimica* and *S. beata* this species has the keels behind the head much more developed; and it further differs in having the head black.

14. **Sphærophthalma euryclea.** (Tab. XIV. fig. 7, ♀.)

Long. 8 millim. ♀.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Head wider than the thorax, transverse in front, concave behind, the sides straight, the eyes projecting, the part behind them more than twice their length, the keel blunt; black, punctured, bearing long black hair, and a patch of dense golden pubescence extends from the eyes round the vertex. The mandibles are ferruginous, with a tuft of golden pubescence at the base. The head immediately above the mandibles is dull ferruginous. The scape of the antennæ is thin and ferruginous; the basal joints of the flagellum are brownish beneath; the third joint is double the length of the fourth. The thorax is not much longer than the head, and is distinctly narrowed behind and in the middle; the base is bluntly rounded; the apex has a gradually rounded slope. The sides at the base are rough and oblique; following this are two stout, sharply-pointed teeth, the basal one being the larger; on the sides of the median segment are three large, sharply-pointed teeth, followed by a small tubercle. The propleuræ are punctured above; the meso- and metapleuræ smooth, shining. The thorax is black, obscure brownish along the sides above; coarsely punctured above, and bearing long black hairs. The abdomen is a little wider than the thorax, and is as long as the head and thorax united, black; the basal segment with a band of pale golden pubescence at the apex, the rest of it being sparsely covered with long blackish hair; a golden line, broad at the base, becoming gradually narrowed towards the apex, runs down the centre of the second segment to a broad transverse band of golden pubescence, which does not reach the apex of the segment, but is joined to it by a short, broad, golden line; there is a similar line on the centre of the third segment; the fourth and fifth segments are entirely golden; the pygidium is shining, punctured at the base, and covered with long fuscous hair. There are a few long hairs on the base of the second segment and still more on its apex; the other segments are rather thickly covered with long black hair. The keel on the basal ventral segment is rounded at the base, the middle distinctly raised; at the apex it is almost obsolete. The second ventral segment has large, widely-separated punctures; the other segments are more closely and finely punctured, and obscure ferruginous. The legs are dull ferruginous, and sparsely covered with white hair; the calcaria are pale; the tibial spines are very long and sharp; the metatarsus is densely clothed beneath with pale fulvous pubescence.

15. **Sphærophthalma animosa.** (Tab. XIV. fig. 8, ♀.)

Capite et thorace ferrugineis, vertice fusco, pedibus antennisque rufis; abdomine supra nigro, aureo-hirto, subtus rufo.

Long. fere 8 millim. ♀.

Hab. NICARAGUA, Chontales (*Janson*).

Head a little wider than the thorax, quadrate, convex in front, more deeply concave at the base; slightly dilated behind the eyes, where it is more than double their length; the keel behind not very acute, not extending on to the vertex; ferruginous, rather strongly punctured, covered with silvery and golden pubescence; the centre of the vertex blackish. Over each antenna there is a transverse carina extending from the base to the eyes, their inner edges forming a triangular tooth. The mandibles are ferruginous, black at the apex. The antennæ are ferruginous, infuscate towards the apex, the scape glabrous; the third joint about twice the length of the fourth. The thorax is ferruginous, quadrate, hardly narrowed in the centre; the sides rough, but not denticulate; the base slightly rounded, the apex with a sharp oblique slope; coarsely punctured above, and sparsely covered with a short silvery pubescence; the propleuræ obscurely striated; the mesopleuræ excavated, shining, glabrous; the metapleuræ with a microscopic white pubescence. The basal segment of the abdomen is ferruginous, with a black or fuscous-black mark across the apex. The second segment is golden, with the apex black, the black dilated in the middle; at the base are two oval black marks and in the centre a square one, incised in the middle. The other segments covered with golden pubescence. The ventral segments are ferruginous; the basal segment is depressed in front and behind, rising in the middle, the keel distinct; the punctuation on the second segment is obscure. The legs are reddish, covered with white hair.

This species is allied to *S. chiapa*, Blake, but is, I think, distinct, the latter having the basal segment of the abdomen black; the antennæ with only the scape and the second joint rufous; the black marks on the base of the second segment differently shaped, the central one being rounded (not incised) at the apex, &c.

16. **Sphærophthalma damia.** (Tab. XIV. fig. 9, ♀.)

Long. fere 12 millim. ♀.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

Head ferruginous, shorter and a little wider than the thorax, rounded in front, almost transverse behind, punctured, sparsely covered with long black hair; a patch of pale golden pubescence on either side of the vertex touching the eyes, there being another and larger patch behind them; the keel distinct, but not projecting much, and not sharply developed above. The apical third of the mandibles black, the middle deeply excavated. The antennæ are stout; the flagellum ferruginous, and covered with golden hair; the third joint is more than twice the length of the fourth. The thorax is entirely ferruginous; above coarsely punctured, and bearing long black hair; the middle broadly contracted; at the base of the contraction is a tubercle and a blunt tooth; on the sides beyond it are seven blunt teeth. The median segment has a sharp oblique slope, and it has the punctures much larger, rounder, and deeper than those on

the mesonotum. The propleuræ are closely punctured; the metapleuræ are covered with fulvous pubescence. The abdomen is longer than the head and thorax united, and, in the middle, is wider than the thorax; ferruginous, a band near the apex of the basal segment, the apex of the second segment, and nearly the whole of the other segments, black; the basal segment has a band of golden pubescence at the apex; the second segment has a triangular mark on the sides, and a larger oblique mark near the apex, golden, the apex itself banded also with golden; the third and fourth segments are golden in the centre; the fifth is entirely golden; the pygidium is densely covered with golden hair. The basal segment bears pale hair, the others long black hair. The ventral segments are ferruginous, blackish at the apex, the apex bearing long pale fuscous hair. The basal segment is punctured; the keel blunt, not raised at the base. The legs are ferruginous, densely covered with pale hair; the knees blackish; the tibial spines rather long, stout; the calcaria pale fulvous; the metatarsus densely covered with golden pubescence.

17. **Sphærophthalma extinctor.** (Tab. XIV. fig. 10, ♀.)

Long. fere 8 millim. ♀.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Head much wider than the thorax, slightly rounded in front, concave behind; the sides broadly rounded, margined; the part behind the eyes a little longer than their length; the front with a distinct channel down the centre; ferruginous, punctured, sparsely covered with golden hair; the tips of the mandibles black. The antennæ pale ferruginous, thick; the scape stout, curved, almost bare; the third joint slightly longer than the fourth. The thorax ferruginous, except a black oblique stripe on the metapleuræ; above sparsely covered with long fuscous hair, strongly punctured, the punctures at the apex running into reticulations; considerably narrowed towards the apex, the base rounded, the middle roundly incised; the tubercle in the centre of the incision large, shining, pale yellow; in front of it are two large acutely-pointed teeth, followed by a small tubercle; behind are five short teeth. The abdomen as long as the head and thorax united, the apex acutely pointed; the basal segment ferruginous, the apex fringed broadly with pale golden hair; the second segment broadly black in the middle, dark ferruginous at the sides, the apex with a broad band of pale golden pubescence, dilated in the middle; the other segments ferruginous, fringed with long golden hair. The basal ventral segment has the keel distinct, dilated in the middle; the second segment is dull ferruginous, punctured. The front legs are entirely ferruginous; the four posterior legs have the knees, tibiæ, and base of the tarsi black.

18. **Sphærophthalma bisignata.**

Mutilla bisignata, Blake, Trans. Am. Ent. Soc. iii. p. 252 [1].
Sphærophthalma bisignata, Blake, op. cit. xiii. p. 249 [2].

Hab. Mexico, Orizaba (*Sumichrast* [1 2]).

19. **Sphærophthalma gothica.**

Mutilla gothica, Blake, Trans. Am. Ent. Soc. iii. p. 252 [1].
Sphærophthalma gothica, Blake, op. cit. xiii. p. 250 [2].

Hab. Mexico (*Sumichrast* [1 2]).

20. **Sphærophthalma izucar.**

Mutilla izucar, Blake, Trans. Am. Ent. Soc. iii. p. 253 [1].
Sphærophthalma izucar, Blake, op. cit. xiii. p. 251 [2].

Hab. Mexico (*Sumichrast* [1 2]).

21. **Sphærophthalma chiapa.**

Mutilla chiapa, Blake, Trans. Am. Ent. Soc. iii. p. 253 [1].
Sphærophthalma chiapa, Blake, op. cit. xiii. p. 251 [2].

Hab. Mexico (*Sumichrast* [1 2]).

22. **Sphærophthalma cruciata.**

Mutilla cruciata, Smith, Cat. Hymen. Ins. iii. p. 42 [1]; Blake, Trans. Am. Ent. Soc. iii. p. 253 [2].
Sphærophthalma cruciata, Blake, op. cit. xiii. p. 251 [3].

Hab. Mexico [2 3].—Amazons, Pará [1].

This species agrees with *S. beata* in having a white cross on the abdomen; but, among other differences, it may be known by the head being ferruginous. Smith [1] describes the cross on the abdomen as silvery, but Blake [2] says that in the Mexican examples it is pale golden. It is probable that the Mexican and Brazilian insects do not belong to the same species.

23. **Sphærophthalma petricola.**

Sphærophthalma petricola, Blake, Trans. Am. Ent. Soc. xiii. p. 252 [1].

Hab. Mexico (*Sumichrast* [1]).

24. **Sphærophthalma auripes.**

Mutilla auripes, Blake, Trans. Am. Ent. Soc. iii. p. 254 [1].
Sphærophthalma auripes, Blake, op. cit. xiii. p. 252 [2].

Hab. Mexico (*Sumichrast* [1 2]).

25. **Sphærophthalma minutissima.**

Sphærophthalma minutissima, Blake, Trans. Am. Ent. Soc. xiii. p. 253 [2].

Hab. Mexico (*Sumichrast* [1]).

26. **Sphærophthalma psammadroma.**

Mutilla psammadroma, Blake, Trans. Am. Ent. Soc. iii. p. 254 [1].
Sphærophthalma psammadroma, Blake, op. cit. xiii. p. 253 [2].

Hab. Mexico (*Sumichrast* [1 2]).

27. **Sphærophthalma ferruginea.**

Mutilla ferruginea, Smith, Descr. of New Species of Hymen. p. 226 (1879) [1].
Sphærophthalma ferruginea, Blake, Trans. Am. Ent. Soc. xiii. p. 249 [2].

Hab. Mexico, Orizaba [1 2].

S. ferruginea probably belongs to this section, for the head is described as "wider than the thorax, subquadrate, the hinder angles acute, the posterior margin nearly straight." It is entirely ferruginous. The insect, however, may belong to Division B, as the first segment of the abdomen is described as "small."

The next four species have the keel behind the head not very distinct. They agree closely in coloration, having the head and thorax entirely black (or with the pleuræ more or less testaceous), and coarsely clothed with silvery, or more often with golden, pubescence; the abdomen black, with two large, or two large and two small, orange spots, the hinder segments fringed with silvery hair; the head broader than long, not bulging out much behind the eyes; the thorax narrowed behind, contracted in the middle.

The following synopsis will aid in their determination :—

1 (2). The pubescence on the head and thorax silvery, the abdomen with only two orange spots . . . . . *amphissa.*
2 (1). The pubescence on the head and thorax bright golden; the abdomen with four orange spots.
3 (4). The pleuræ entirely black . . . . . *orithyia.*
4 (3). The pleuræ more or less testaceous.
5 (6). The pleuræ entirely testaceous; the thorax above covered entirely with golden pubescence; a stout tooth before the middle of the thorax . . *lycimnia.*
6 (5). The propleuræ only testaceous; the thorax at the sides only covered with golden pubescence; no stout tooth before the middle of the thorax; the head distinctly bulging out behind the eyes, behind concave . . . *phedyma.*

28. **Sphærophthalma amphissa.** (Tab. XIV. fig. 11, ♀.)

Long. 9–12 millim. ♀.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Head very slightly wider than the thorax, coarsely punctured, from the base of the antennæ thickly covered with golden pubescence; the apex of the clypeus rounded; the mandibles broadly ferruginous in the middle; the antennal tubercles ferruginous on the outside. Behind the eyes the head projects very little, and is there about one and a half times their length; it is slightly, but distinctly, concave posteriorly; the sides are rounded. The scape of the antennæ is shining, and is covered with white hair; the flagellum is covered with a dense pale down; the third joint is one half longer than the fourth. The mesonotum is coarsely punctured; there is a broad patch of golden pubescence on the sides, originating from a little behind the middle, and continued down the sides of the median segment as a narrower band; the base of the mesonotum rounded; the sides in the middle broadly incised, with a tooth at the base and a blunt shining tubercle in the centre, there being also a sharp tooth before the tooth at the base of the incision; the middle of the incision acute. The apex of the median segment is semiperpendicular. The pleuræ are impunctate, glabrous, and shining; a semioblique crenulated keel before the middle. The abdomen closely coriaceous, thickly covered with stout, stiff, depressed hair; the basal segment with long white hair; on the second segment are two oval, shining, orange maculæ; the third and following segments are densely covered with silvery pubescence; the pygidium densely covered with long, stiff, golden hair. The basal ventral segment has a straight keel, and there are two oblique keels on the sides, and also a few punctures on them; the second segment is covered with large punctures, and with long pale fulvous hair; the other ventral segments are finely punctured and fringed with white hair. The legs covered with white hair, it being especially long on the tibiæ; the tibial spines are short; the apices of the tarsal joints with ferruginous hairs.

In two examples the maculæ on the second abdominal segment are shining and without golden hair—in the others the golden pubescence is thick and hides the sculpture—and the silvery patch on the sides of the mesonotum is wanting; but this is perhaps due to abrasion. The hinder portion of the propleuræ may be punctured, and it does not project. The hair on the apical ventral segments may be silvery or golden.

29. **Sphærophthalma orithyia.**

Long. 13·5 millim. ♀.

Hab. Mexico, Paso del Macho (*Höge*).

Head slightly, but distinctly, broader than the thorax and not much shorter than it; coarsely punctured, the punctures on the front running almost into reticulations; the

vertex and the upper part of the front covered with golden pubescence; the apex of the clypeus bluntly rounded, shagreened, fringed with golden hair; the mandibles before the apex ferruginous. The head rounded in front, transverse behind; the hinder part hardly twice the length of the eyes; the middle is slightly dilated and is about level with the eyes; behind it is slightly narrowed. The scape of the antennæ very slightly pubescent; the flagellum more or less reddish-brown beneath; the third joint more than twice the length of the fourth. The thorax coarsely punctured; the centre with golden pubescence; the base bluntly rounded; the apex narrowed, truncated, sharply obliquely sloped; at the sides the base projects into a small tooth, beyond this is another small tooth, and from the middle is a shallow curve having a small tooth at the base and the apex and another in the centre; the edge of the median segment with three stout teeth. The base of the propleuræ obliquely cut off from the apex, which is somewhat strongly punctured; the meso- and metapleuræ smooth, impunctate, glabrous, save a crenulated ridge on the former. The basal segment of the abdomen bears white hair and is coarsely punctured; at the base laterally are two small, elongate, blood-red marks; near the apex are two large, roundish, orange maculæ. The third to the fifth segments are closely, not very finely punctured, and fringed lightly with silvery hair; the pygidium at the apex is covered with stiff, long, fulvous hair. The basal ventral segment can hardly be said to be keeled, it being so broad and rounded; the second segment bears large, elongated, deep punctures and a few long white hairs; the other ventral segments are punctured all over, and fringed with long, pale, fulvous hair; on the sides of the third, fourth, and fifth segments is an oblique furrow. The tibiæ and tarsi are thickly covered with white hair; the hair on the hind legs inclines to fulvous. I can see no spines on the hinder tibiæ: if they are not broken, the calcaria are very short.

S. amphissa, to which the present species bears a certain resemblance, differs from *S. orithyia* in having the head not dilated from the posterior margin of the eyes; the pubescence on the head and mesonotum denser and white; the base of the propleuræ not obliquely truncated, and cut off from the apical part; the second abdominal segment with only the large maculæ; and the basal ventral segment distinctly keeled.

Some examples from North Yucatan (*Gaumer*) are probably varieties of *S. orithyia*. They are smaller, being only 10 millim. in length; the incision in the centre of the thorax is apparently deeper; the two marks on the second abdominal segment are longer, being longer than broad (the converse being the case with the type); and the apical segments of the abdomen are densely covered with bright golden hair, hiding the sculpture entirely. The clothing of the apical abdominal segments in the type is apparently rubbed off.

30. **Sphærophthalma lycimnia.** (Tab. XIV. fig. 13, ♀.)

Long. 12 millim. ♀.

Hab. MEXICO, Cordova (*Höge*).

Head a little wider than the thorax, rounded in front, almost transverse behind, the hinder angles moderately rounded; ferruginous, except the posterior orbits and the upper part of the occiput behind; covered with long, pale, fuscous hair, the posterior orbits with silvery pubescence; the mandibles ferruginous, with the tips black. The scape of the antennæ punctured, sparsely covered with white hair; the flagellum reddish beneath; the third joint more than twice the length of the fourth. The thorax coarsely punctured above; the base almost transverse; from there it becomes slightly dilated to near the middle, and is then rather abruptly and distinctly narrowed, the pleura projecting into a stout blunt tooth; the sides rugged; the apex at the top is rounded, the rest oblique. The propleuræ are blackish and finely aciculated, and sharply separated from the mesopleuræ; the base of the mesopleuræ is black, above and at the sides before the tooth they are obscurely punctured and covered with a pale pubescence, behind it they are shining, impunctate, and glabrous; the apex of the metapleuræ is blackish, this being also the case with the apex of the median segment. The pubescence on the thorax is white. The basal segment of the abdomen is covered with long white hair. On the base of the second segment are two oval reddish maculæ; and at the apex are two transverse ones, which are double the size of the basal pair, the apical pair being almost united in the middle. The third to the fifth segments are closely punctured at the apex and covered with dull reddish hair. The pygidium is pale ferruginous, except at the extreme apex, and thickly covered with long, stiff, pale, golden pubescence. The basal ventral segment has a **V**-shaped raised space in the centre in front; the keel is blunt, and ends before the apex of the segment, its base being oblique. The second segment has large, widely-separated, punctures, and is sparsely covered with rather long white hairs. The other ventral segments are fringed also with long white hair. The hypopygium is ferruginous. The femora and tibiæ are covered with white hair; the tibial spines are ferruginous, the calcaria pale fulvous; the tarsi thickly covered with ferruginous pubescence.

This species may be readily known from the others here described with four orange spots on the abdomen by the projection on the middle of the thorax, and by the thorax being entirely ferruginous.

31. **Sphærophthalma phedyma.** (Tab. XIV. fig. 15, ♀.)

Long. 12 millim. ♀.

Hab. GUATEMALA, El Tumbador 2500 feet (*Champion*).

Very similar in coloration to *S. mirandillensis*, but with the head bulging out behind and the eyes concave (instead of transverse) posteriorly.

Head wider than the thorax, coarsely punctured; the vertex broadly golden to near the end, and sparsely covered with blackish hair and with a golden pubescence; the pubescence behind the eyes is pale golden, on the oral region it is long, fulvous, and white; the mandibles are entirely black. The scape of the antennæ bears golden hair; the flagellum from the fourth joint is brownish beneath; the third joint is more than double the length of the fourth. The thorax is not much longer than the head, coarsely punctured; above ferruginous, with a black band narrowed in the centre down its middle (the band being broadest at the base, where it is somewhat triangular); the base transverse; the apical half narrower than the basal half; the apex has a steep oblique slope. The base of the pleuræ is striolated transversely and is ferruginous above; the centre shining, impunctate, and covered on the lower side with a white pubescence; the apex has some shallow punctures and is stoutly toothed. The first abdominal segment is covered with long white hair; close to the base of the second segment are two small orange spots, and at the apex are two much larger ones; the third to the fifth segments are fringed with pale golden hair; the pygidium at the apex is testaceous and is covered with long bright golden hairs. The base of the first ventral segment is convex, narrowed to a blunt ridge; the apical keel is indicated only at the base and is oblique. The punctures on the second segment are shallow and irregular in size. The ventral segments are fringed with pale fulvous hair; the hypopygium is obscure testaceous and is punctured. The hair on the coxæ, femora, and tibiæ is white, on the tarsi ferruginous; the tibial spines are very long.

iii. *The posterior edges of the head rounded, not carinate.* (Species 32–52.)

Blake, in his Monograph, only records two members of this section from North America. The following two species have the same type of coloration as the four preceding—the head and thorax covered with bright golden pubescence, the legs black, and the abdomen black with golden spots—and only differ from them in having no trace of a keel on the edge of the head behind.

1 (2). The golden pubescence on the mesonotum not divided; the pleuræ entirely black . . . . . *cordovensis.*

2 (1). The golden pubescence on the mesonotum divided; the pleuræ broadly rufous at the base . . . . . *mirandillensis.*

32. Sphærophthalma cordovensis.

Long. 14 millim. ♀.

Hab. Mexico, Cordova (*Höge*).

Head a little (but distinctly) wider than the thorax, almost transverse before and behind, the posterior margin broadly rounded; closely and rather coarsely punctured,

and covered with a thick silvery pubescence; the vertex broadly ferruginous; the clypeus fringed with long pale fulvous hair; the mandibles entirely black. The scape of the antennæ covered with white hair; the flagellum brownish beneath; the third joint about twice the length of the fourth, not much narrower at the base than at the apex. The thorax is not much longer than the head, the base rounded; sharply narrowed from the tubercle; the edges rough, the sides of the median segment denticulate; coarsely punctured, and covered with white hair; the apex black (the black triangularly projecting in the middle), obliquely rounded, densely covered with long white hair. The pleuræ shining, impunctate, except at the apex, which has some moderately large punctures; covered with a short white pile. The basal segment of the abdomen covered with long white hair; on the base of the second segment are two oval transverse orange marks, and at the apex are two larger round ones; the third and following segments are covered with white hair; the pygidium black, covered with pale fulvous hair. The first ventral segment triangular at the base, shining, the sides depressed, the keel blunt, rising gradually at the base; the punctures on the second segment large and irregular; the apices of the segments fringed with white hair. The femora and tibiæ sparingly covered with long whitish hair, that on the tibiæ having a fulvous tinge; the pubescence on the tarsi bright ferruginous.

33. **Sphærophthalma mirandillensis.**

Long. 12 millim. ♀.

Hab. GUATEMALA, Mirandilla 1700 feet (*Champion*).

Agrees almost in coloration with *S. cordovensis*, except that the pleuræ are reddish at the base, and that there is a black triangular mark at the base of the mesonotum; also differs in the hinder edges of the head not being broadly rounded, while behind it is distinctly convex.

Head distinctly wider than the thorax, transverse in front, convex behind; the edges rounded posteriorly, but not broadly; coarsely punctured; the vertex ferruginous, the hair on it black; the apex of the clypeus rounded, dull piceous; the mandibles ferruginous before the apex, their base bearing long white hair. The scape of the antennæ covered with white hair, its apex ferruginous; the flagellum obscure brownish beneath; the third joint distinctly narrowed at the base, rather more than twice the length of the fourth. The thorax not much longer than the head, coarsely punctured; the mesonotum bearing blackish hair, the median segment with longer white hair; the base rounded; the apical half distinctly narrowed; the apex with the sides coarsely toothed at the base, oblique; ferruginous, a somewhat triangular elongate mark at the base and apex black. There is a subtriangular ferruginous mark on the pleuræ at the base, the central part of this being striolated; the apex has widely-separated punctures; the base of the mesopleuræ is obscure ferruginous. The

basal abdominal segment is covered with long white hair; at the base of the second segment are two small orange marks, and at the apex two roundish-oval ones, the latter more than twice the size of the basal marks; the third to the fifth segments are covered with pale fulvous hair; the pygidium is densely clothed with bright golden hair. The basal ventral segment is depressed in the middle and furrowed along the sides; there is no keel in the centre of the apical portion. The second segment is impressed with large and irregular punctures, and it is covered with long whitish hair, this being also the case with the other segments, which are closely punctured. The coxæ, femora, and tibiæ are covered with long white hair, the tarsi with ferruginous hair; the calcaria are white; the tibial spines are long, sharp, and reddish.

The next three species are deep velvety black throughout, and bear silvery marks and spots on the thorax and head. They may be separated as follows:—

1 (2). The flagellum of the antennæ rufous; the head behind developed twice the length of the eyes and without silvery marks . . . . *xanthocerata.*
2 (1). The antennæ entirely black; the head behind not twice the length of the eyes, and with silvery marks.
3 (4). The vertex with two small silvery marks; the thorax with four silvery marks, the spine on the middle curved, twice as long as broad . . . . . *ipsea.*
4 (3). The vertex with one large silvery patch; the thorax with a silvery patch, the spine on the middle not twice as long as broad . . . *areta.*

34. **Sphærophthalma xanthocerata.** (Tab. XIV. fig. 14, ♀.)

Mutilla xanthocerata, Smith, Trans. Ent. Soc. Lond. 3rd ser. i. p. 35[1]; Gerst. Archiv f. Naturg. xl. p. 56[2].

Hab. Panama (*Stretch*[1]), Bugaba 800 to 1500 feet, Tolé (*Champion*), Veragua[2].

Smith[1] says that the thorax has three obtuse teeth on each side before the middle, an expression which I do not quite understand. In the ten specimens before me the middle is contracted; at the base of the contraction is a stout tooth, then there is a blunt, smaller, rounded projection, followed by the usual smooth tubercle at the base of the median segment. At the side of the pronotum are two small tubercles—one at the outer edge, the other inside it; the sides are oblique, and end at the apex in a triangular incision. The mesopleuræ above at the hinder part smooth, glabrous, and impunctate; the rest covered with a short, sericeous, silvery pubescence, and with a few long hairs. The apex of the metapleuræ bears some large punctures, there being also a few at the base. The median segment has a gradually rounded slope. The pygidium is bluntly keeled down the centre; at the base is some silvery pubescence,

and it also bears some large black hairs. The scape of the antennæ is thickly covered with silvery or pale fulvous hair; the flagellum has a pale fulvous or silvery pile; the third joint is twice the length of the fourth. The head behind does not project much beyond the level of the eyes and is rounded.

35. **Sphærophthalma ipsea.** (Tab. XIV. fig. 16, ♀.)

Long. 16 millim. ♀.

Hab. Panama, Bugaba 800 to 1500 feet (*Champion*).

Head alutaceous, above the antennæ strongly punctured, clothed all over with short, thick, black hairs, and bearing also some long hairs; the antennal tubercle large, shining, glabrous; the oral region covered with long pale fuscous hair; the part behind the eyes does not equal the eyes in length, and is rounded; on the vertex and touching the eyes are two patches of golden pubescence. The scape of the antennæ is clothed with long silvery hair; the second joint is covered with shorter hair; the other joints are clothed with silvery pubescence; the third joint is about twice the length of the fourth. The pronotum is shining, impunctate, and almost glabrous. The mesonotum velvety, the base bearing some long black hairs; at the apex is a broad band of silvery pubescence, with a square dilatation behind; at the base it is oblique, the oblique part having a small tubercle at the base and apex; the apical half is almost straight and ends in a long smooth tooth, and from this tooth it becomes narrowed to the tubercle at the base of the median segment, this tubercle being large; the sides of the median segment are bluntly and roundly denticulate. The mesopleuræ have the basal half impressed with widely-separated punctures, the apical half smooth and impunctate, but with the apex crenulated. The apex of the metapleuræ is coarsely punctured, and on the lower part is a patch of pale golden pubescence. The apex of the median segment has a sharply oblique slope, and down the sides is a moderately broad pale golden band. On the apex of the basal abdominal segment is a broad pale golden line; on the second segment are two pale golden oval marks, the lower part of the sides being covered with silvery pubescence, above which is a line of punctures; the third and following segments are lined laterally with pale golden pubescence; the pygidium is indistinctly punctured, the sides covered with long pale golden hair. The basal ventral segment shagreened, keeled down the centre and at the sides; the second segment with large, distinctly separated, round punctures, and fringed at the apex with silvery pubescence; the other ventral segments with the punctures smaller, and also fringed with silvery pubescence. The legs are covered with silvery hair; on the tarsi the pubescence is dense and golden; the tibial spines long, black, and sharp; the tibiæ punctured; the calcaria white.

This species is nearly related to *S. xanthocerata*, but that insect is longer, and has the head much more developed behind the eyes and without golden marks; *S. xantho-*

cerata, moreover, has two oblique marks of silvery pubescence on the mesonotum and the flagellum of the antennæ reddish.

√ 36. **Sphærophthalma areta.** (Tab. XIV. fig. 12, ♀.)

Long. 11 millim. ♀.

Hab. PANAMA, Bugaba, 800 to 1500 feet (*Champion*).

Head a little wider than the thorax, closely and coarsely punctured; a large square patch of golden pubescence on the vertex, the sides of the vertex and the front sparsely covered with rather long black hair; the oral region and the lower outer orbits covered with silvery hair; the base of the mandibles covered with longish silvery hair; the antennal tubercles shining, impunctate. The eyes project beyond the back portion of the head, this being about one-fourth longer than the width of the eyes. The scape of the antennæ slender, curved, and covered with rather long silvery hair; the base of the flagellum with shorter hair; the third joint about as long as the fourth and fifth joints united; the apical joints beneath reddish. The thorax above coarsely punctured and covered with short black hair; down the sides from the middle is a broad band of scattered golden hair. The base of the mesothorax is transverse, with the angles acute and triangular on the lower middle portion, the upper part being narrowed and rounded; the basal part is broad, with the sides straight and ending in a sharp triangular tooth, there being also a blunt intermediate tubercle. The median segment is narrowed and stoutly denticulate at the sides; the apex is oblique. The pleuræ are smooth and impunctate, the lower part in the middle with silvery pile; there is an oblique keel on the mesopleura. The basal abdominal segment has no mark; the sides have long silvery hair. The second segment is closely and coarsely punctured, and covered with stiff, black, short hair; at the extreme base are two small oval marks, and nearer the apex are two larger oval marks of a more yellowish hue. The other segments are fringed laterally with long white hair. The ventral segments are fringed with long silvery hair; the basal segment is keeled in the middle, but not at the sides, and the apex is oblique. The legs bear long silvery hair; the tibial spurs are of moderate length and are curved; the calcaria are white.

Compared with *S. ipsea* this is a smaller and narrower insect, and, apart from the different arrangement of the markings, may be easily known from it by the head being much more developed behind the eyes.

The following three species have the head, thorax, abdomen, and legs black; the head and thorax bearing silvery pubescence; the abdomen with two large orange or golden maculæ:—

1 (2). The head transverse behind . . . . . *cleonica.*
2 (1). The head roundly convex behind.
3 (4). The part of the head behind the eyes more than twice their length; a stout tooth on the base of the thorax . . . . . *janira.*
4 (3). The part of the head behind the eyes not twice their length; no tooth on the base of the thorax . . . . . *panamensis.*

37. **Sphærophthalma cleonica.** (Tab. XIV. fig. 17, ♀.)

Long. 8 millim. ♀.

Hab. Mexico, Temax in North Yucatan (*Gaumer*).

Head slightly wider than the thorax, punctured, densely covered all over with a thick dull silvery pubescence; the eyes projecting beyond the posterior part, which is a little longer than their diameter; behind it is transverse, but with the sides rounded; the apex of the clypeus almost transverse; the mandibles for the greater part ferruginous. The scape of the antennæ sparsely pilose; the flagellum more or less dull ferruginous beneath; the third joint hardly one-half longer than the fourth. The mesonotum is rounded at the base; very coarsely punctured and sparsely haired; the basal half rounded, dilated; the apical half narrower, but dilated at the extreme apex; on the basal half are two small teeth, and there is another small one at its apex; the tubercle shining, large. The median segment is sharply oblique at the apex; the top rounded. The basal part of the propleuræ is depressed, but not excavated, shining, very finely striated, and reddish in colour; the apical part projects sharply from it, is somewhat triangular, and closely punctured. The mesopleuræ are finely shagreened. The metapleuræ are impunctate, shining, and shallowly excavated. The first and second segments of the abdomen black, closely punctured and covered with short, depressed black hair; the second segment with two large oval maculæ of golden hair; the other segments covered all over with golden hair, which is of a paler hue than the maculæ. The base of the first ventral segment is ferruginous, rounded, broader than long; the keel a little dilated at the base. The punctuation of the second segment is rather strong, that of the others very fine and at the apical fourth only. The second ventral segment bears white hair all over; the others are fringed with long white hair at the apex. The femora are sparsely, and the tibiæ and tarsi densely, covered with long white hair; the tibial spines long; the calcaria white.

In having the eyes projecting beyond the back part of the head this species agrees with *S. janira*, but it differs from that insect in the following characters:—the upper part of the propleuræ does not project into a distinct tooth visible from above; the middle of the thorax is much more deeply incised and toothed, it being also of about the same width as the head (in *S. janira* the head is distinctly wider than the thorax); the thorax wants the silvery pubescence; the third and following abdominal segments

are densely covered with golden pubescence; the head is entirely black; and only the basal part of the pleuræ is ferruginous.

38. **Sphærophthalma janira.**

Long. fere 9 millim. ♀.

Hab. MEXICO, North Yucatan (*Gaumer*).

Similar in general form and coloration to *S. amphissa*, but differing essentially from it in the thorax not being much longer than the head (in *S. amphissa* it is nearly twice as long); the propleuræ are deeply excavated in the middle and at the tip of the apex project into a blunt tooth; the incision on the sides of the mesonotum is much less deep; the eyes project beyond the hind part of the head; and the third antennal joint is shorter compared to the fourth.

Head coarsely punctured, the top covered with golden pubescence, the other parts bearing silvery hair; the part behind the eyes quite twice their length, becoming a little dilated posteriorly (but still not extending beyond the eyes); the occiput transverse; the sides broadly rounded; below the eyes the colour is ferruginous; the mandibles are for the greater part ferruginous. The scape and the base of the flagellum are more or less ferruginous; the third joint about one-quarter longer than the fourth. The mesonotum is coarsely punctured; the middle with a large patch of silvery pubescence, the base rounded; from the projecting part of the pleuræ the mesonotum becomes narrowed slightly to the apex, and at the tubercle it retreats inwardly a little; the median segment has an oblique slope. The pleuræ are ferruginous, punctured; the propleura deeply excavated in the middle, and at the apex above it projects into a large stout triangular tooth, which is very distinct when viewed from above. The abdomen is closely punctured; on the second segment are two large round orange marks; the apical segments are pale ferruginous at the apex and fringed with pale hair; the pygidium is entirely pale ferruginous and shining. The basal ventral segment is ferruginous, the keel a little oblique, and straight throughout; the other ventral segment punctured and more or less ferruginous. The legs are covered with white hair; the apices of the tarsal joints with fiery-ferruginous hair; the tibial spines rather long and slender.

39. **Sphærophthalma panamensis.**

Long. 7 millim. ♀.

Hab. PANAMA, Bugaba (*Champion*).

Easily known from the foregoing species, *S. cleonica* and *S. janira*, by the part of the head behind the eyes being rather obliquely narrowed and not equalling their diameter, and by the very distinctly roundly convex occiput.

Head, if anything, wider than the thorax, somewhat coarsely and strongly punctured;

the vertex with a large mark of golden pubescence, its sides with some long black hairs; the front with some pale golden pubescence; the apex of the clypeus rounded; the base of the mandibles broadly ferruginous, and covered with long pale hairs, furrowed. The scape of the antennæ covered with silvery hair; the flagellum with silvery pubescence; the third joint twice the length of the fourth. The thorax is coarsely punctured, not very much longer than the head, and narrowed towards the apex; the base is rounded; the apex sharply oblique; the middle with a shallow indentation; along the sides are two belts of golden pubescence. The basal segment of the abdomen bears long white hair. The second segment bears short depressed black hair, and laterally a silvery pubescence; at the base are two small pale orange marks, and nearer the apex are two large transverse oval maculæ of golden hair. The third to the fifth segments are finely and closely punctured at the apex, and fringed with pale silvery hair. The pygidium is densely covered with golden pubescence.

The next species agrees almost in coloration with *S. phedyma* and *S. lycimnia*, it having the head covered with a dense fulvous pubescence, this being also the case with the mesonotum, and the abdomen has two large and two small orange marks, the legs being black. *S. sonorensis*, however, may be easily separated from these species by the head being broadly rounded posteriorly, and not keeled down the edges, it being also convex, not slightly concave behind.

40. **Sphærophthalma sonorensis.** (Tab. XIV. fig. 18, ♀.)

Long. 8 millim. ♀.

Hab. Mexico, Northern Sonora (*Morrison*).

Entirely ferruginous, except the apical segments of the abdomen, which are blackish in the middle. The head densely covered with pale hair, small, much narrower than the thorax, rounded in front, almost transverse behind; the eyes not projecting; the part behind them not much longer than their width, hardly narrowed, the edges rounded; the tips of the mandibles blackish. The antennæ thick; the scape bare; the third joint rather more than one-half longer than the fourth. The thorax twice the length of the head; the base transverse, raised above the level of the head; the sides straight, without teeth or tubercle, not, or hardly, narrowed towards the apex; densely covered with long pale hair; the apex of the median segment with an oblique slope. The pleuræ are shining and covered with long white hair. The abdomen is longer than the head and thorax united; the base rounded; the segments from the second becoming gradually and rather sharply narrowed towards the apex; the second segment strongly punctured, the punctures clearly separated; the third, fourth, and fifth segments fringed with silvery pubescence; the pygidium smooth, shining, im-

unctate, and fringed with long white hair laterally; the entire abdomen thickly haired, the segments fringed with silvery pubescence. The legs ferruginous, densely covered with silvery hair; the tibiæ without spines.

The remaining species are small (from 4–8 millim.), and all have the head more or less black, the thorax ferruginous, and the abdomen black or ferruginous, marked with black.

a. *The head for the greater part black.* (Species 41–44.)

1 (2). The thorax not incised in the middle . . . . . *incognata, munda.*
2 (1). The thorax incised in the middle.
3 (4). The abdomen with four golden marks; length 8 millim. . . . *chontalensis.*
4 (3). The abdomen with a golden band; length 4 millim. . . . . *veræpacis.*

41. **Sphærophthalma incognata.**

Long. 6 millim. ♀.

Hab. PANAMA, Volcan de Chiriqui 3000 feet (*Champion*).

Head a little wider than the thorax, rugosely punctured, black; the front and oral region ferruginous; the vertex covered with a dense golden pubescence; the eyes project beyond the hinder part of the head, which is somewhat roundly narrowed, its edges being rounded; the part behind the eyes equals them in length; in front the head is, if anything, convex, behind it is semitransverse, almost concave; the apex of the clypeus is transverse; the tips only of the mandibles are blackish. The scape of the antennæ is almost bare; the joints of the flagellum are slightly marked with fuscous above; the third joint is hardly twice the length of the fourth. The thorax above is transverse in the middle at the base, the sides being somewhat obliquely rounded; the mesonotum and median segment are coarsely punctured, the mesonotum bearing a short golden pubescence; the median segment is more or less blackish, has a gradually rounded slope, and bears long black hairs; the sides of the mesonotum are very slightly narrowed and have before the middle a projecting blunt tooth; the sides of the median segment are bluntly toothed. The base of the propleuræ is coarsely punctured; the mesopleuræ bear a whitish pubescence; the apex of the metapleuræ is blackish. The basal segment of the abdomen is dull ferruginous, and is covered with long fuscous hair. The second segment has two oval transverse yellow maculæ; the sides from these are ferruginous, except at the apex; the maculæ and the ferruginous part covered with golden pubescence. The third and following segments are covered with long fulvous hair; the fourth segment and the pygidium towards the apex dull testaceous. The first ventral segment is testaceous; the base is rounded; the keel on the apical part is small but distinct, and does not project appreciably at the base. The

second segment is ferruginous; its punctures are large and widely separated, the pubescence sparse. The other ventral segments are blackish, and bear rather long hair; they are punctured towards the apex. The legs are reddish, the knees fuscous; the hair on the femora moderately long, white, and sparse, that on the tibiæ still sparser; the pubescence on the tibiæ is close; the spurs are long and sharp.

S. incognata may be a form of *S. munda*; but the keel on the basal ventral segment is less distinct; there is no red mark on the vertex, and the golden pubescence on it is much denser; and the tibiæ are shorter and thicker.

42. **Sphærophthalma munda.** (Tab. XIV. fig. 19, ♀.)

Long. 7 millim. ♀.

Hab. PANAMA, Volcan de Chiriqui 3000 feet (*Champion*).

Head a little wider than the thorax; the eyes projecting, the part of the head behind them obliquely narrowed, rounded at the sides, and about equalling the eyes in length; coarsely rugose, covered with silvery pubescence; the front and oral region are ferruginous, the black in the middle being triangularly incised, and there is a ferruginous mark on the vertex; the clypeus projects a little, its apex being transverse. The mandibles ferruginous, the apical teeth black; they are not grooved and bear long pale fulvous hair. The antennæ ferruginous; the apical joints of the flagellum blackish above; the third joint about twice the length of the fourth. The thorax is rounded at the base, the apex with an oblique slope; the sides at the base are straight; at the tubercle is a small incision, from which the thorax becomes gradually and slightly narrowed; the sides of the median segment stoutly toothed. The propleuræ stoutly punctured; the meso- and metapleuræ smooth, shining. The basal segment of the abdomen is ferruginous and covered with long hair; the two oval maculæ on the second segment are yellow, and attached to them are two large marks, which extend to the base but not to the apex; the other segments are covered with pale fulvous hair. The first two ventral segments are ferruginous; the basal segment is distinctly keeled, the basal half of the keel being dilated; the second segment has the punctures large, the other segments have them close and minute. The legs ferruginous, slender; the hinder tibiæ with three long fulvous spines.

43. **Sphærophthalma chontalensis.** (Tab. XIV. fig. 20, ♀.)

Long. 8 millim. ♀.

Hab. NICARAGUA, Chontales (*Janson*).

Very similar to *S. cephalica*, but differing in there being only one incision in the sides of the thorax (the small one, toothed at the base and apex, being absent), the base of the thorax distinctly rounded, and the base of the flagellum thinner; on the base of the second abdominal segment are two separated lines; the two oval maculæ

are much smaller, and do not reach the sides; and the basal ventral segment is distinctly keeled.

Head, if anything, narrower than the thorax, slightly convex in front and behind; the eyes hardly projecting beyond the back part of the head, which is straight and does not equal them in length, the edges being rounded; rather coarsely punctured, covered with golden and silvery pubescence; black, the front for the greater part ferruginous; the clypeus dull reddish in the middle, its apex transverse; the mandibles black, the base ferruginous, the middle deeply grooved. The scape and the two basal joints of the flagellum more or less ferruginous; the third joint twice the length of the fourth. The thorax rounded at the base, the apex with a semioblique slope, the top broadly rounded; the sides at the basal half straight, the apex broadly incised and with two stout tubercles before the incision. The propleuræ at the base punctured; the meso- and metapleuræ impunctate, the apex blackish. The basal segment of the abdomen densely covered with long white hair; the small basal marks on the second segment are golden, the larger marks yellow; the third to the fifth segments densely covered with silvery hair; the pygidium with long fulvous hair. The basal ventral segment is testaceous, the others black; the keel on the apical part of the first segment is distinct, broad, and at the top is clearly separated from the basal region; the punctures on the second segment are large, those on the other segments fine and close; the hypopygium is testaceous; the hair is long and white. The coxæ, femora, and tarsi are obscure ferruginous; the tibiæ are more or less blackish, their spines long, sharp, and also blackish.

√ 44. **Sphærophthalma veræpacis.**

Long. 4 millim. ♀.

Hab. GUATEMALA, Purula in Vera Paz (*Champion*).

Head wider than the thorax, closely punctured; above bearing long fuscous hairs; on the face the pubescence is silvery; the eyes are prominent, not reaching to the top, the head well developed and not narrowed behind them; at the back, at the sides, there is a projecting tubercle. The scape of the antennæ is densely covered with white hair; the flagellum bears a pale down. The thorax is broad in front, considerably narrowed behind, coarsely punctured, and bears long black hair; the pronotum is transverse, the sides rounded. The mesonotum is excavated deeply in the middle; at the base are two blunt teeth; there is a blunt tooth in the deeply incised middle, and at the apex are one blunt and two sharper and longer teeth, followed by another blunt one. The pleuræ are excavated, shining, glabrous, impunctate. The median segment is clothed with long white hair. The abdomen is a little broader than the thorax; the basal segment becomes gradually dilated towards the apex and is confluent with the second, its apex, and also the base of the second segment, smooth, shining, im-

punctate, the rest of the segment being closely punctured; the second segment is closely, rugosely punctured; the third segment is shining, finely transversely striated. The first and second segments bear long black hairs; the fourth and following segments are fringed with longish silvery hair; the basal segment is reddish, suffused with black, the second black, with two transverse yellow marks bordered with reddish, the third blackish at the apex, reddish at the base, the others black. The legs covered with silvery hair; the hinder femora suffused with fuscous.

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b. *The head ferruginous.* (Species 45–52.)

1 (2). The thorax laterally with long sharp spines . . . . . *subgracilis.*
2 (1). The thorax without long spines.
3 (4). The abdomen black, with four yellow marks on the second segment; the thorax deeply incised . . . . . *cephalica.*
4 (3). The abdomen for the greater part ferruginous, without yellow marks; the thorax not deeply incised.
5 (6). The thorax at the apex with short blunt teeth . . . . . *odiosa.*
6 (5). The thorax at the apex without teeth.
7 (12). The second abdominal segment without a broad yellow band.
8 (9). The thorax elongate, narrowed towards the apex, and with four black marks down the sides above, much narrower than the head . . . . *ludovica.*
9 (8). The thorax not elongate, not narrowed towards the apex, and without black marks.
10 (11). The thorax a little incised at the middle, entirely ferruginous; the black marks at the base of the second abdominal segment widely separated . *rustica.*
11 (10). The thorax not incised, and with a black line down the middle . . . *ingrata.*
12 (7). The abdomen black, with a broad yellow band on the second segment.
13 (14). The part of the head behind the eyes equalling them in length; the apex of the abdomen black . . . . . *minutoria.*
14 (13). The part of the head behind the eyes not equalling them in length; the apex of the abdomen golden . . . . . *gratiosa.*

✓45. **Sphærophthalma subgracilis.** (Tab. XIV. fig. 21, ♀.)

Long. 6 millim. ♀.

Hab. Panama, Volcan de Chiriqui 4000 feet (*Champion*).

Colour rufo-testaceous, the apex of the second, and the third and fourth abdominal segments black. Head with the eyes a little wider than the thorax, slightly convex in front, much narrowed behind, the hinder angles rounded, the central part somewhat convex; the part behind the eyes slightly exceeding them in length, the eyes themselves projecting largely; finely rugose, and covered with a golden pubescence, but not so thickly as to hide the sculpture; the clypeus impunctate, shining; the mandibles entirely ferruginous, sparsely covered at the basal half with long hairs. The scape of

the antennæ shining, sparsely haired, much brighter in tint than the flagellum; the third joint is not quite the length of the fourth. The thorax elongate, rounded in front, narrowed behind; the middle with a shallow contraction; in front of the contraction are two stout teeth, the basal one being the shorter and thicker of the two. The median segment with a gradually rounded slope, and with a distinct keel down its middle; on the edges are four large, thick, slightly curved teeth; it bears some long hairs. The upper part of the thorax sculptured like the head, and bearing a short white pubescence and some white hairs. The posterior part of the propleuræ rather coarsely punctured, and with two tubercles at the top; the meso- and metapleuræ shining, impunctate. The basal segment of the abdomen finely punctured and covered with long white hair. The second segment more strongly punctured, and bearing some blackish hairs; at the base is a short longitudinal line of pale golden hair, and there is a broader transverse band at the apex, the apex itself being black. The third to the fifth segments are blackish, covered with golden pubescence. The pygidium is shining, impunctate, covered with long hairs. The keel on the basal ventral segment projects as a curved tooth; the second segment with large, distinctly separated punctures; the other ventral segments minutely punctured. The legs are covered with white hair.

A second specimen from the same locality wants the keel on the median segment; it is apparently a variety of the same species.

√ 46. **Sphærophthalma cephalica.** (Tab. XIV. fig. 22, ♀.)

Long. fere 8 millim. ♀.

Hab. GUATEMALA, Las Mercedes 3000 feet (*Champion*).

Head a little wider than the thorax, slightly convex in front and behind; the eyes projecting beyond the back part of the head, which does not equal the eyes in length and is not narrowed behind; the hinder edges rounded, coarsely punctured, covered with glistening white hair; the oral and antennal region narrowed, the front projecting widely over them; the apex of the clypeus transverse, ferruginous; the hinder part of the vertex, the occiput, the apices of the mandibles, and the outer orbits for the greater part, black. The scape of the antennæ ferruginous, sparsely covered with white hair; the flagellum brownish beneath, blackish above; the third joint twice the length of the fourth. The thorax above coarsely punctured, sparsely covered with short silvery hair; the base transverse, the apex with a sharp slope, rounded at the top; the basal half at the sides is straight, then there is a small rounded curve, toothed at the base and apex, followed by a wider incurvation, the basal part of which is tuberculate; there is a black somewhat rounded mark at the base in the centre, and there is a longer black mark at the apex, which becomes gradually widened from the base. The basal triangular part of the propleuræ is punctured; the rest, and also the meso- and

metapleuræ, smooth, shining, impunctate; the apex blackish. The basal segment of the abdomen is black, covered with rather long pale hair. The second segment is black; at the base there is a flavo-rufous mark, dilated at the sides; beyond this are two large transverse oval yellow maculæ, edged with dull ferruginous, and nearly uniting in the centre. The third to the fifth segments are covered with silvery hair; the pygidium is densely clothed with long golden hair. The ventral surface is ferruginous, but the apical segments are more or less black; the basal segment has no keel, the apical part being broad; the second segment has the punctures moderately large and widely separated; the other segments are finely punctured at the apex and are fringed with long silvery hair. The legs are ferruginous, the knees and part of the four hinder tibiæ blackish; the tibiæ and tarsi are covered with white hair.

47. **Sphærophthalma odiosa.**

Long. 7 millim. ♀.

Hab. Panama, Bugaba 800 to 1500 feet (*Champion*).

Head not much wider than the thorax; the eyes projecting, the head behind them roundly narrowed, rounded at the edges, not equalling the eyes in length; rugosely punctured, covered with a short golden pubescence, and with a few longer black hairs; ferruginous, the occiput and the outer orbits black; the apex of the mandibles transverse, blackish. The scape of the antennæ covered with long, soft white hairs; the third joint about one and a half times longer than the fourth; the apical joints blackish. The base of the thorax is convex; the edges end in a short, blunt, triangular tooth; the basal half gradually becomes slightly dilated and ends in two sharp teeth, the apical tooth being the longer; from there the thorax is a little narrowed; the median segment has a gradually rounded slope, its sides being stoutly toothed. The thorax is ferruginous, the base, a line down the centre, dilated on either side at the middle, and the greater part of the metapleuræ, black; coarsely punctured, above covered with a silvery and golden pubescence. The apical part of the propleuræ impunctate, bearing a microscopic white pubescence, and bluntly tuberculate above. The basal segment of the abdomen ferruginous, and covered with long white hair, the apex having a narrow fringe of golden pubescence, from which a line of golden pubescence runs down the basal third of the second segment; the sides and apex of the second segment are covered with golden pubescence, and from the apical band a line of golden pubescence runs down to the apex; the sides of the segments are also covered with golden hair and are ferruginous in colour. The first ventral segment is testaceous; the basal part is rounded, the apical part with a distinct tooth. The second ventral segment is black, ferruginous down the middle and at the apex; the punctures not very large, the hair long, sparse, and white; on its base is a transverse keel. The other ventral segments are ferruginous and covered with long white hair; they have their apices finely and

closely punctured. The legs entirely ferruginous, the hair white; the tibial spines long, sharp, and ferruginous; the tarsal spines bright ferruginous.

48. **Sphærophthalma ludovica.** (Tab. XIV. fig. 24, ♀.)

Long. 8 millim. ♀.

Hab. PANAMA, Volcan de Chiriqui 3000 feet (*Champion*).

Head distinctly wider than the thorax, the part behind the eyes roundly narrowed and not equalling half their diameter; ferruginous, the vertex black, with a small ferruginous mark in the centre, which bears a bright golden pubescence; the front with silvery pubescence; the mandibles ferruginous, the tips black. The antennæ rather stout, ferruginous; the apical four joints black; the third joint not much longer than the fourth. The thorax with a distinct neck, the part immediately behind the neck rounded, the middle very slightly incurved, the apex with a semiobliquely rounded slope; finely and closely coriaceous; the pleuræ shining, except a small punctured part on the mesopleuræ in the middle at the top, which is black; in front of the mesonotum are two oblique black marks, and on either side of the median segment are two broad black longitudinal lines, extending to the apex. The abdomen is elongate, longer than the head and thorax united, ferruginous, punctured; the first and second segments are covered with silvery and golden pubescence; on the base of the second segment are two large, somewhat triangular black marks united at the apex; the pygidium is thickly covered with golden hair. The basal ventral segment has a distinct keel, the apex of which is oblique; the second segment is strongly punctured; the third and fourth ventral segments, and the base of the fifth, are black, the apex of the fifth and the sixth ferruginous. The legs are ferruginous, the hairs on the tibiæ golden.

49. **Sphærophthalma rustica.**

Long. 7 millim. ♀.

Hab. PANAMA, Volcan de Chiriqui 3000 feet (*Champion*).

Head distinctly wider than the thorax; the eyes largely projecting, a little longer than the hinder part of the head, which is roundly narrowed; ferruginous, the hinder orbits black; covered with a short golden pubescence and with some long black hairs; the apex of the clypeus is distinctly transverse. The mandibles are almost entirely ferruginous; they are slightly punctured and clothed with golden hairs. The scape and the second joint of the antennæ are reddish, the scape with white hairs; the third joint is about one and a half times longer than the fourth. The thorax is rounded at the base; the apex has a semioblique slope, the top being broadly rounded; before the middle is a stout triangular tooth, followed by a small rounded tubercle in front of the usual tubercles; the centre is distinctly but not deeply curved inwardly; the sides

of the apex with a row of blunt tubercles. The thorax above is coarsely punctured, especially at the apex, and bears long pale hairs; the apex of the median segment is black. The pleuræ are impunctate, shining; the apex is blackish. The abdomen is as long as the head and thorax united and is much broader than the head; the basal segment is ferruginous; the second segment is ferruginous at the base, where there are two large round black marks, the middle ferruginous, suffused with yellow, the apex broadly black; the remaining segments are black; the pygidium is covered with long pale fulvous hair. The keel on the basal ventral segment commences before the middle of the segment and is distinct, but blunt. The second ventral segment is ferruginous, except at the apex; the other ventral segments black. The legs are reddish-testaceous, the apex of the femora and the knees black, the hinder tarsi infuscate.

50. **Sphærophthalma ingrata.**

Long. fere 5 millim. ♀.

Hab. PANAMA, Volcan de Chiriqui 3000 feet (*Champion*).

Head very little wider than the thorax, not much narrowed behind the eyes, the part behind them about one-fourth longer than their diameter, the hinder part only very slightly and roundly concave; ferruginous, the sides, occiput, and a line down the centre of the vertex, black. The antennæ pale ferruginous, the apex black; the third joint not much longer than the fourth. The thorax broad, not narrowed towards the apex nor in the middle, at the base almost transverse, the apex with an oblique slope and without spines; ferruginous, a broad black stripe down the middle. The abdomen is as long as the head and thorax united, equal in width to the thorax; ferruginous, the second segment black, with a large mark at the base in the middle and two marks on either side pale ferruginous; the apical segments are entirely ferruginous and bear long pale hairs; the pygidium has a golden pubescence. The ventral surface ferruginous, except the third and fourth segments, which are black. The legs ferruginous; the hind tibiæ rather stoutly spined.

51. **Sphærophthalma minutoria.** (Tab. XIV. fig. 26, ♀.)

Long. 4 millim. ♀.

Hab. GUATEMALA, near the city 5000 feet (*Champion*).

Head not much wider than the thorax, rounded in front, almost transverse behind, with the sides rounded; ferruginous, punctured, and covered with white hair; the eyes slightly projecting, the part of the head behind them a little longer than their diameter, the tips of the mandibles blackish. The antennæ stout, pale ferruginous, the apical joints blackish; the scape curved, bare; the third joint thinner, and not much longer, than the fourth. The thorax a little longer than the head, rounded in front, not much, if at all, narrowed towards the apex, the sides straight; the apex with an oblique slope,

the top rounded; above strongly punctured and sparsely covered with fuscous hair; the propleuræ punctured. The abdomen is slightly wider than the thorax, shorter than the head and thorax united; the basal segment ferruginous, the apex fringed with golden hair; the second segment punctured, black, with a broad pale yellowish band in the middle; the other segments black, clothed with long black hairs; the pygidium clothed laterally with long pale hairs. The legs are covered densely with long pale fulvous hair; the femora black, the knees, tibiæ, and tarsi testaceous.

52. **Sphærophthalma gratiosa.**

Long. fere 5 millim. ♀.

Hab. PANAMA, Volcan de Chiriqui 3000 feet (*Champion*).

Head wider than the thorax, rounded in front, distinctly concave behind; the eyes large, the part of the head behind them not half their length; ferruginous, covered with golden pubescence. The antennæ pale ferruginous, the apical two joints black; the scape curved, bare, the third and fourth joints subequal. The thorax ferruginous, distinctly longer than the head, not much narrowed towards the apex, very slightly contracted in the middle, the tubercle distinct; rounded in front, the apex with an oblique slope, the sides tuberculate; above punctured and covered with golden pubescence. The propleuræ closely punctured. The abdomen longer than the head and thorax united, sharply and gradually narrowed from the middle of the second segment to the apex; the basal segment pale ferruginous, the apex with a band of pale golden pubescence; the second segment black, and having a broad band of pale golden pubescence in the middle; the third segment black; the other segments densely covered with golden pubescence. The ventral segments pale ferruginous; the apices fringed with fulvous hair. The legs pale ferruginous, covered rather densely with fulvous hair.

In the coloration of the abdomen *S. gratiosa* agrees closely with *S. minutoria*, except that the apical segments are densely covered with golden hair; also differing from that species in having the abdomen longer than the head and thorax united, the sides of the median segment tuberculate, and the eyes very much larger.

The following species have been described by Smith so imperfectly, that I am unable to refer them to their proper section:—

53. **Sphærophthalma luxuriosa.**

Mutilla luxuriosa, Smith, Descr. of New Species of Hymen. p. 224[1].

Sphærophthalma luxuriosa, Blake, Trans. Am. Ent. Soc. xiii. p. 255[2].

Hab. MEXICO[1].

54. **Sphærophthalma vulpina.**

Mutilla vulpina, Smith, Descr. of New Species of Hymen. p. 225 [1].
Sphærophthalma vulpina, Blake, Trans. Am. Ent. Soc. xiii. p. 255 [2].

Hab. MEXICO, Oaxaca [1].

55. **Sphærophthalma derelicta.**

Mutilla derelicta, Smith, Descr. of New Species of Hymen. p. 226 [1].
Sphærophthalma derelicta, Blake, Trans. Am. Ent. Soc. xiii. p. 255 [2].

Hab. CENTRAL AMERICA [1].

56. **Sphærophthalma macrocephala.**

Mutilla macrocephala, Smith, Descr. of New Species of Hymen. p. 223 [1].
Sphærophthalma macrocephala, Blake, Trans. Am. Ent. Soc. xiii. p. 256 [2].

Hab. MEXICO, Orizaba [1].

57. **Sphærophthalma munifica.**

Mutilla munifica, Smith, Descr. of New Species of Hymen. p. 223 [1].
Sphærophthalma munifica, Blake, Trans. Am. Ent. Soc. xiii. p. 256 [2].

Hab. MEXICO [1].

58. **Sphærophthalma ducalis.**

Mutilla ducalis, Smith, Descr. of New Species of Hymen. p. 224 [1].
Sphærophthalma ducalis, Blake, Trans. Am. Ent. Soc. xiii. p. 256 [2].

Hab. MEXICO, Orizaba [1].—SOUTH AMERICA [1].

59. **Sphærophthalma separata.**

Mutilla separata, Smith, Descr. of New Species of Hymen. p. 227 [1].
Sphærophthalma separata, Blake, Trans. Am. Ent. Soc. xiii. p. 257 [2].

Hab. MEXICO, Orizaba [1].

The following are the only males known of this section from our region:—

60. **Sphærophthalma excentrica.** (Tab. XIV. figg. 25; 25 *a*, ♂ organ.)

Nigra; abdomine cæruleo, segmentis albo-hirsutis; alis nigro-fuscis, basi hyalinis. ♂.
Long. 15 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

Head narrower than the thorax, deep black, strongly punctured; the front and vertex bearing long pale fuscous hair, it being thickest on the back of the vertex; the clypeus densely covered with long pale yellowish hair; the mandibles black, punctured

and covered with fuscous hair at the base; the eyes entire, projecting beyond the hinder part of the head, which is a little shorter than their diameter; the occiput slightly convex, rounded. The antennæ are moderately stout; the scape bearing long pale hair, the flagellum with a silky down; the third and fourth joints are subequal. The thorax deep black, strongly punctured, densely covered with black hair; the pronotum well developed, rounded in front, roundly concave behind; the scutellum pyramidal, the bottom part strongly punctured and haired, the top smooth and shining, the apex almost perpendicular. The pleuræ are densely covered with long pale hair; the middle of the mesopleuræ projects into a large stout tubercle. The median segment is oblique at the top; the apex rounded, the rest semioblique, bulging out in the middle; at the base is a broad thick band of pale silvery pubescence; the sides are strongly punctured. The abdomen is shining, bluish; the second segment only very slightly, the other segments more thickly and strongly punctured; the basal segment sparsely covered with pale hair; the base of the second segment broadly, and that of the third and fourth segments more narrowly, edged with pale pubescence. The first ventral segment is strongly punctured at the base; the raised central part has on the lateral portions a few punctures, and along its sides is a groove; the middle is rather blunt, the apex oblique. The second ventral segment bears scattered punctures, and is fringed with white hair along the sides. The other ventral segments are more strongly punctured and fringed with pale hairs. The hypopygium is keeled in the middle; the sides slightly hollowed and punctured. The legs (especially the tibiæ and tarsi) are thickly covered with white hair; the calcaria are white. Wings: the radial cellule projects a little beyond the apex of the third cubital cellule; the basal abscissa of the radius is a little curved, the apical abscissa elbowed a little below the middle; the top of the second cubital cellule is shorter than the third; the first recurrent nervure is received shortly before, the second a little beyond, the middle. The tegulæ are broad and shining.

61. **Sphærophthalma jaliscoensis.** (Tab. XIV. fig. 23, ♂.)

Long. 9 millim. ♂.

Hab. Mexico, Santiago Iscuintla in Jalisco (*Schumann*).

Head very slightly rounded in front, transverse behind; black, densely covered with long pale hair, punctured; the eyes large, longer than the space behind them; the mandibles ferruginous before the apex. The antennæ black; the scape punctured, curved, and covered with long stiff white hair; the flagellum with a dull pile; the third joint shorter than the fourth. The thorax rufous, punctured, covered with long white hair; the hair on the mesonotum black, the pleuræ finely punctured, the metapleuræ, and also the median segment, reticulated; the scutellum flat, the hair at the apex very thick. The abdomen longer than the head and thorax united, rufous, covered with long white hair; all the segments at the apex thickly fringed with silvery

hair; the second segment with widely separated punctures; the other segments rather coarsely punctured. The basal ventral segment has the keel blunt, oblique at the base and apex; the other segments are strongly punctured and fringed with long pale fulvous hair; ferruginous, the apical segment black. The legs black, covered with white hair; the calcaria long, stout, fuscous. Wings: the radial cellule extends beyond the apex of the third cubital; the first abscissa of the radius is oblique, the apical abscissa curved; the first transverse cubital nervure is elbowed near the bottom, the second is curved and approaches the first at the top, so that the part bounded by them is less than the space bounded by the first recurrent and the second transverse cubital nervures; the first recurrent nervure is received shortly beyond the middle of the cellule; the nervure bounding the third cubital cellule is very indistinct, the cellule very much narrowed at the bottom, the nervure there being obliterated in a small hyaline spot. The tegulæ are rufous and are densely covered with pale fulvous hair.

62. **Sphærophthalma volatilis.** (Tab. XIV. fig. 27, ♂.)

Long. 9–10 millim. ♂.

Hab. Mexico, Teapa in Tabasco (*H. H. Smith*).

Head not much narrower than the thorax, almost transverse in front and behind, rather strongly punctured, the punctures clearly separated; covered with long fuscous hair; the hinder ocelli in pits; a broad shallow furrow runs down the front from the anterior ocellus; the eyes are large, very shining, projecting, the part behind the eyes equalling them in length, and broadly rounded at the sides; the mandibles are entirely black. The antennæ are of moderate thickness; the scape curved, covered sparsely with long white hair; the flagellum bears a black microscopic down; the third and fourth joints are subequal. The pronotum is rounded in front and behind, closely punctured, and covered (particularly at the apex) with long pale hair. The mesonotum is more strongly punctured, the punctures being larger and deeper; it is sparsely pilose. The median segment has a gradually rounded slope and is reticulated. The propleuræ are finely punctured above; the mesopleuræ are densely covered with greyish hair. The abdomen is as long as the head and thorax united; the basal segment is black, except at the extreme apex, shining, punctured, the punctures wide apart, and bearing long white hair; the second segment is bright lemon-yellow, brownish at the base and apex; the other segments are black, fringed at the apices with rufous hair. The keel on the basal ventral segment is sharply pointed and is obliquely truncated at the apex. The ventral segments are entirely black; the second segment is strongly, the others finely and closely punctured, and all are fringed with fulvous hair; the hypopygium is depressed, punctured, and densely covered with long rufous hair. The legs are black and covered with pale silvery hair; the calcaria white.

Wings: the radial cellule extends beyond the apex of the third cubital cellule; the first abscissa of the radius is oblique, the apical abscissa curved; the first transverse cubital nervure is roundly elbowed at the middle, the second curved; the third cubital cellule is complete and is much narrowed at the bottom; the first recurrent nervure is received nearly in the middle of the cellule, the second almost interstitial. The tegulæ are moderately large, shining, and have some glistening depressed hairs.

63. **Sphærophthalma intrepida.**

Long. 7 millim. ♂.

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*).

Very nearly related to *S. volatilis*, but smaller; the abdomen from the basal segment entirely rufous above and beneath; the second cubital cellule wider at the top, where it is nearly as long as the space bounded by the first transverse cubital and the first recurrent nervures, the latter being distinctly received before the middle; the third cubital cellule wider at the bottom and receiving the recurrent nervure in the middle; the entire thorax covered with long silvery hair.

Head as wide as the thorax, finely punctured, covered with long white hair; a broad shallow furrow on the front; roundly narrowed behind the eyes, almost transverse in front, rounded posteriorly. The antennæ are stout; the scape shining and sparsely covered with white hair; the third and fourth joints subequal. The pronotum rounded at the base, semicircular at the apex, rather strongly punctured; covered with long fuscous hair, the apex with a fringe of shorter hair; the mesonotum shining, bearing large clearly separated punctures; the scutellum with long pale hair; the median segment reticulated; the mesopleuræ covered with long white hair. The basal segment of the abdomen black, shining, punctured, bearing some long white hairs, the other segments rufous; the second segment punctured; the apical segments fringed densely with long rufous hair. The keel on the first ventral segment distinct, but blunt, obliquely truncated at the base. The other ventral segments are rufous, except the base of the second. The legs are black and are covered with white hair. Wings pale fuscous; the radial cellule projecting considerably beyond the apex of the third cubital cellule; the basal and apical abscissæ of the radius curved; the second cubital cellule at the top as long as the part bounded by the first transverse cubital and the first recurrent nervure, the latter being recurved before the middle of the cellule.

64. **Sphærophthalma laticeps.**

Mutilla laticeps, Blake, Trans. Am. Ent. Soc. iii. p. 249 [1].

Sphærophthalma laticeps, Blake, op. cit. xiii. p. 244 [2].

Hab. MEXICO (*Sumichrast* [1 2]).

65. **Sphærophthalma xalapa.**

Mutilla xalapa, Blake, Trans. Am. Ent. Soc. iii. p. 249 [1].
Sphærophthalma xalapa, Blake, op. cit. xiii. p. 245 [2].

Hab. MEXICO (*Sumichrast* [1] [2]).

66. **Sphærophthalma zapoteca.**

Mutilla zapoteca, Blake, Trans. Am. Ent. Soc. iii. p. 250 [1].
Sphærophthalma zapoteca, Blake, op. cit. xiii. p. 245 [2].

Hab. MEXICO (*Sumichrast* [1] [2]).

B. *The basal segment of the abdomen not or feebly dilated towards the apex, and not confluent with the second.* (Species 67 *et seq.*)

67. **Sphærophthalma laothoe.**

Rufo-brunnea, aureo-hirta; pedibus brunneis; abdomine maculis 2 nigris. ♀.
Long. fere 10 millim.

Hab. MEXICO, San Blas in Jalisco (*Schumann*).

Head distinctly narrower than the thorax, ferruginous; the vertex and front densely covered with golden pubescence; the cheeks and clypeus with the pubescence longer and more silvery; in front distinctly rounded; behind, the centre is transverse, with the sides rounded; the part behind the eyes not one-half their length. The mandibles black, with the base ferruginous. The antennæ of moderate thickness and black; the scape rufous, covered with golden hair; the basal joints of the flagellum dull reddish beneath, the third joint about one-quarter longer than the fourth. The thorax is twice the length of the head; the base almost transverse in the middle; from the middle it becomes gradually narrowed to the apex, which has an oblique slope; ferruginous; the base of the mesonotum covered broadly with black hair, the rest of it and the median segment covered densely with golden hair; the mesopleuræ densely covered with long pale golden hair; the metapleuræ at the apex with large round punctures. The abdomen is shorter than the head and thorax united, ferruginous, the basal segment slightly and gradually dilated towards the apex; coarsely punctured; sparsely covered with long pale hair; the apex with a dense band of silvery pubescence. The second segment at the base has a large, somewhat oval, mark of black hairs, the apex in the centre bears a patch of black hair, and the apex at the sides is fringed with silvery pubescence; the rest of the segment, except the black parts, having scattered golden hairs. The third segment is black in the middle, the sides covered with golden hair; the fourth and fifth segments are entirely covered with golden hair. The pygidium is black, longitudinally striated, the apex entire; the sides fringed with long black hairs. The basal ventral segment has a blunt keel, the apex with a rather

long oblique slope; the second segment punctured, sparsely covered with long fuscous hair, the base in the middle black; the other segments fringed with pale golden pubescence and bearing also long pale hair. The legs are ferruginous; the knees and tibial spines blackish, the calcaria ferruginous and black.

This species somewhat resembles *S. sumichrasti* in general coloration; but the pubescence is distinctly golden, the head is smaller and is much less developed behind, the third antennal joint is shorter compared to the fourth, the pronotum and the base of the mesonotum are not covered with long fulvous hair, and the second abdominal segment wants the two spots of golden pubescence.

68. **Sphærophthalma phya.**

Nigra; capite, thorace abdominisque apice albo-sericeo-hirtis; abdominis segmento 2° maculis 2 flavis. ♀.
Long. 8·5 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

The head with the eyes wider than the thorax, slightly rounded in front and behind; covered densely with a pale golden pubescence; the eyes much longer than the part of the head behind them. The scape of the antennæ covered with white hair; the flagellum stout; the third joint not one-quarter longer than the fourth. The thorax elongate, more than twice the length of the head, gradually narrowed from near the base to the apex, the latter having a gradually rounded oblique slope; coarsely punctured, sparsely covered with black hair, the median segment with a broad band of silvery pubescence; the mesopleuræ covered with silvery pubescence; the metapleuræ coarsely reticulated. The abdomen is black, shorter than the head and thorax united; the basal segment is very coarsely punctured, sparsely covered with long white hair, the base oblique; the second segment is punctured, but not so strongly as the first, covered with long black hair, towards its apex are two round pale yellow marks; the apical segments are covered all over with pale pubescence. There is no keel on the basal ventral segment. The legs are black, very sparsely covered with pale hair; the tibial spines and the calcaria black.

69. **Sphærophthalma proclea.**

Nigra; capite, apice mesonoti apiceque abdominis argenteo-hirtis; abdominis segmento 2° maculis 4 pallide auranteis. ♀.
Long. 12 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

The head a little narrower than the thorax, rounded in front and behind, densely covered with pale fulvous pubescence; the basal half of the mandibles ferruginous. The scape of the antennæ curved, covered with long white hair; the flagellum brownish beneath; the third and fourth joints subequal. The thorax sharply narrowed from

the middle to the apex, the base broadly rounded, the apex with a semi-oblique slope; black, covered with black hairs; a broad curved band of pale golden pubescence on the apex of the mesonotum; the mesopleuræ with golden pubescence; the apex of the metapleuræ coarsely punctured. The abdomen a little longer than the head and thorax united, and broader than the thorax, black; the basal segment strongly punctured and sparsely covered with long fuscous hair; on the base of the second segment are two small round yellow marks, and towards the apex are two larger ones of the same colour, which are broader than long; the fourth and fifth segments densely covered with silvery pubescence; the pygidium finely longitudinally striolate and fringed with long fuscous hair. The basal ventral segment has a long stout keel, which is punctured, and more or less rufous; at the base it is nearly straight; the apex is oblique. The second ventral segment is strongly punctured and sparsely covered with long white hair. The other ventral segments are thickly haired. The legs are black and covered with long white hair; the calcaria and spines are black.

70. **Sphærophthalma cobira.**

Long. 12 millim. ♀.

Hab. Mexico, North Yucatan (*Gaumer*).

Very similar in coloration to *S. proclea*; but differing from it in having the third joint of the antennæ double the length of the fourth, and in the four spots on the second abdominal segment being reddish-orange (not yellow), the spots large, the hinder pair more rounded in shape. The head subquadrate, nearly transverse in front, rounded behind, densely covered with pale fulvous pubescence; the part behind the eyes longer than their length; the basal part of the mandibles rufous. The antennæ stout; the scape curved, covered with long white hair; the flagellum brownish beneath; the third joint twice the length of the fourth. The thorax black, covered with black hair, gradually narrowed from the middle to the apex; a broad curved band of white pubescence on the apex of the mesonotum; the base rounded, the apex with a semiperpendicular slope; the mesopleuræ strongly punctured and covered with white hair; the apex of the metapleuræ much more strongly punctured than the mesopleuræ. The abdomen black, covered with black hair; the fourth and fifth segments densely covered with silvery pubescence; on the second segment are four large roundish orange spots, the hinder pair being the larger. The pygidium coriaceous, fringed with pale hair. The basal ventral segment with a stout keel, hollowed in the centre, the apex oblique; black, the rest of the segment rufous. The second ventral segment strongly punctured, and covered with long pale hair; the other ventral segments more thickly covered with longer white hair. The legs black, thickly covered with white hair; the calcaria and spines black.

71. Sphærophthalma anthracia.

Nigra; capite, pronoto metanotoque rufo-hirtis; abdominis segmento 2° maculis 2 argenteis. ♀.
Long. 9–12 millim.

Hab. Panama, Bugaba 800 to 1500 feet, San Feliz (*Champion*).

Head slightly narrower than the thorax, rounded in front, transverse behind; the part behind the eyes equalling them in length; densely covered with golden pubescence, the pubescence on the cheeks and behind the eyes silvery; the mandibles entirely black. The antennæ black, the flagellum brownish beneath; the scape covered with long white hair; the third joint about one-quarter longer than the fourth. The thorax not much narrowed towards the apex; black, the mesonotum with black hair; the pleuræ covered with long silvery hair; the pronotum, the base of the mesonotum, and two round marks on the median segment covered with long golden hair; the apex of the metapleuræ reticulated. The abdomen a little longer than the head and thorax united, wider than the thorax, black, covered with black pubescence; the basal segment dilated towards the apex, covered with long white hair, the apex bordered with white pubescence; near the base of the second segment are two round marks of white pubescence; the apex of the second segment, except in the middle, the third, except in the centre, and the sides of the fourth and fifth segments (the latter only very narrowly) covered with silvery pubescence. The pygidium obscurely striolate, margined with long black hair. The basal ventral segment ferruginous at the base, covered with long white hair; the keel blunt, gradually raised to the apex, which is rounded at the top and obliquely truncated; the second ventral segment is strongly punctured, sparsely covered with long white hair; the other ventral segments hid by a pale silvery pubescence. The legs are black and covered with long white hair; the spines and calcaria are black.

72. Sphærophthalma hiera.

Long. 11 millim. ♀.

Hab. Mexico, Paso del Macho (*Höge*).

Very similar to *S. anthracia*, but with the median segment (instead of having two golden marks) covered all over with golden pubescence, and the two marks on the second abdominal segment golden (not silvery), the marks much larger and not round.

The head is a little narrower than the thorax, rounded in front and behind, densely covered with golden pubescence; the antennal tubercles and the base of the mandibles ferruginous. The antennal scape curved, covered with long white hair; the flagellum thick, the third and fourth joints subequal. The thorax black, narrowed towards the apex; the pronotum, the sides of the mesonotum, and the median segment entirely, covered with golden pubescence; the mesopleuræ covered with white pubescence; the metapleuræ coarsely reticulated. The abdomen as long as the head and thorax united,

black; the basal segment dilated towards the apex, covered with long white hair; on the base of the second segment are two large marks, longer than broad and truncated at the apex, of golden pubescence; the apex of the second segment, the third and the fourth segments, and the sides of the fifth, covered with silvery pubescence. The pygidium longitudinally striated; the sides bordered with long fuscous hair. The basal ventral segment covered with long white hair; the keel stout, gradually raised from the base to the apex, which is oblique and is rounded at the top; the second ventral segment very strongly punctured and sparsely covered with white hair; the other ventral segments densely covered with silvery pubescence and hair. The legs black; the tibial spines and the calcaria black.

73. **Sphærophthalma dictynna.**

Nigra; capite, apice mesonoti metanotique maculis 2, abdominis apice segmentoque 2° argenteo-hirtis. ♀.
Long. 14 millim.

Hab. PANAMA, Bugaba 800 to 1500 feet (*Champion*).

The head as wide as the thorax, rounded in front and behind, densely covered with pale silvery pubescence; the eyes much longer than the part of the head behind them; the mandibles entirely black, and covered with long silvery hair at the base. The antennæ stout; the scape covered with long silvery hair, the flagellum with a dense pale pubescence; the third joint about one-half longer than the fourth. The thorax is more than twice the length of the head, narrowed from the middle towards the apex, rounded in front, the apex with an obliquely rounded slope, black; the apex of the mesonotum with a broad band of fulvous pubescence; the median segment with a band of fulvous pubescence on either side; the mesopleuræ densely covered with silvery pubescence; the metapleuræ shining, bare, the extreme apex coarsely punctured. The abdomen not much longer than the head and thorax united, black; the basal segment covered with long pale hair, and at the apex densely fringed with silvery pubescence; the second segment with two round pale yellow spots at the base and two larger ones towards the apex, the sides at the apex clothed with silvery pubescence, which is also the case with the sides of the third segment; the fourth and fifth segments covered with silvery pubescence. The pygidium longitudinally striated, fringed at the base and at the sides with long fulvous hair. The second ventral segment with the keel not extending to the middle of the segment, its apex straight; the second ventral segment has widely separated punctures and is very sparsely covered with long white hair; the other ventral segments are densely covered with pale fulvous pubescence and hairs. The legs are black, sparsely covered with white hair; the tibial spines black, the calcaria white.

74. Sphærophthalma sicheliana.

Mutilla sicheliana, Saussure, Ann. Soc. Ent. Fr. 1867, p. 360, t. 8. fig. 10 [1]; Blake, Trans. Am. Ent. Soc. iii. p. 257 [2].

Sphærophthalma sicheliana, Blake, Trans. Am. Ent. Soc. xiii. p. 217 [3].

Hab. North America, Arizona [3]. — Mexico [2 3], Northern Sonora (*Morrison*), Tehuacan, Eastern Cordillera (*Saussure* [1]), Jalisco, San Blas (*Schumann*), Chilpancingo in Guerrero (*H. H. Smith*).

This species varies from 10 to 14 millim. in length. In all the specimens I have seen the black on the mesonotum is much more extended than in Saussure's figure; in fact, in all of them the entire mesonotum is black. The second abdominal segment varies in the amount of black on it, as does also the amount of black on the legs. The third antennal joint is not much longer than the fourth. The keel on the basal ventral segment is very distinct, and is rounded at the base, oblique at the apex, and slightly incised in the middle. The hair on the head and thorax varies from very pale fulvous to deep ochraceous.

75. Sphærophthalma philinna.

Rufo-brunnea; capite, linea mesonoti, abdominis apice segmentoque 2° apice late argenteo-hirtis. ♀. Long. 12 millim.

Hab. Mexico, Venta de Zopilote in Guerrero 2800 feet (*H. H. Smith*).

Head densely covered with white pubescence; subquadrate, rounded in front, transverse behind; the part behind the eyes almost double their width; the antennal tubercles and the base of the mandibles ferruginous. The antennæ ferruginous; the scape curved, covered with long white hair; the third joint twice the length of the fourth. The thorax not much longer than the head, rounded in front, gradually narrowed from the middle to the apex, the apex with an oblique slope, ferruginous; the apex of the mesonotum with a broad curved band of white pubescence, the front part covered with very long black hair; the pleuræ covered with long white hair; the metapleuræ reticulated. The abdomen as long as the head and thorax united; dark ferruginous above, the sides and the ventral surface much lighter in colour; covered with long black hair; the basal segment gradually dilated to the apex, covered with long white hair; the second segment with a broad band of white pubescence, which, in the middle, is triangularly extended backwards, reaching near to the base of the segment; the fourth and fifth segments covered densely with long white pubescence. The pygidium coriaceous, fringed laterally with long fuscous hair. The basal ventral segment coarsely punctured, the keel distinct, long, the base slightly, the apex abruptly oblique; the second ventral segment strongly punctured; the segments 3–5 densely covered with white pubescence; the sixth segment black. The legs ferruginous, covered with long white hair; the tibial spines and the calcaria black.

This species agrees generally in coloration with *S. sicheliana*, but may be easily known from it by the longer head and shorter thorax; the third antennal joint nearly twice the length of the fourth (in *S. sicheliana* it is not much more than one-half longer), the slope of the median segment more abrupt, and the second segment of the abdomen without two small patches of yellow pubescence, its apex broadly covered with white pubescence, which extends triangularly beyond the middle.

76. **Sphærophthalma temaxensis.**

Nigra; capite, pronoto, maculis 2 metanoti, abdominis basi segmento 2° maculis 2, segmentisque 3°–6^{m} argenteo-pilosis. ♀.
Long. 11 millim.

Hab. MEXICO, Temax in North Yucatan (*Gaumer*).

Head subquadrate, almost transverse in front, rounded behind, densely covered with pale ochraceous pubescence, the antennal tubercles and the base of the mandibles reddish. The antennæ black; the scape with long white glistening hair; the third joint hardly one-quarter longer than the fourth. The thorax twice the length of the head, the base almost transverse, the apex with a semioblique slope; from the middle it becomes gradually narrowed to the apex. The sides of the mesonotum are very strongly punctured; the base has a band of pale fulvous hair; on the apex are two elongated marks (narrowed towards the apex) of pale pubescence. The mesopleuræ are covered with long white hair; the metapleuræ with large deep round punctures. The abdomen is black, longer than the head and thorax united, and is sharply narrowed from the middle to the apex; the basal segment becomes wider towards the apex, is coarsely punctured, and bears long white hair, the extreme apex having a band of pale fulvous pubescence; the second segment has two roundish marks of white pubescence at the base, the apex being banded with white pubescence, except in the middle; the segments 3–6 are densely covered with white pubescence, except in the centre. The pygidium is finely longitudinally striolate, and fringed laterally with long fuscous hair; the apex is not incised. The basal ventral segment has a not very distinct keel; the second ventral segment bears scattered punctures, and is sparsely covered with white hair; the other ventral segments are densely covered with white hair; the hypopygium is rufous, bare, finely transversely striated. The legs are black and covered with white hair; the spines and calcaria are black.

77. **Sphærophthalma schumanni.**

Nigra; capite, pronoto maculaque mesonoti argenteo-pilosis; abdomine argenteo-piloso, maculis 3 nigris. ♀.
Long. 10 millim.

Hab. MEXICO, Tepic (*Schumann*).

Head subquadrate, almost transverse before and behind; the part behind the eyes scarcely equalling them in length; densely covered with pale fulvous pubescence; the

basal half of the mandibles ferruginous. The scape of the antennæ ferruginous and covered with long white hairs; the basal two joints of the flagellum ferruginous, its second joint twice the length of the third. The thorax rounded at the base, the apex with an oblique slope, the apical half sharply narrowed; black; the pronotum thickly covered with pale fulvous hair; there is a spot of pale golden pubescence on the middle of the mesonotum, the apex bearing long white hairs; the pleuræ are thickly covered with pale hairs; the metapleuræ are coarsely reticulated. The abdomen is densely covered with pale fulvous pubescence; at the base is a large black mark, which becomes gradually wider towards the apex, the base having a short neck; from this mark a black line runs uniting it with a slightly smaller one which has the apex dilated in the middle. The first segment is broader than long, hollowed in the centre; the sides and apex are coarsely punctured and bear long white hair; the apex is more or less ferruginous. The pygidium is black, longitudinally striolated, the sides bearing long black hairs; the apex is not incised. The keel on the basal ventral segment is large, truncated at the base and apex, and is present only on the middle of the segment; the second ventral segment is coarsely punctured, and sparsely covered with white hairs; the other ventral segments are densely haired. The legs reddish, covered with long white hair; the spines and calcaria reddish.

78. **Sphærophthalma pallene.**

Nigra, argenteo-pilosa; thoracis basi apiceque nigris; abdominis basi et apice nigris, apice segmento 2° late nigro. ♀.

Long. 14 millim.

Hab. MEXICO, Ventanas in Durango 2000 feet (*Forrer*).

In general coloration this insect approaches *S. sumichrasti*; but it differs from the female of that species in having the base and apex of the thorax above broadly black, the basal segment of the abdomen black and not densely covered with pale pubescence, and the second black mark on the abdomen divided in the middle, while the occiput is slightly concave and not transverse as in *S. sumichrasti*.

The head subquadrate, rounded in front, slightly convex behind; densely covered with pale fulvous pubescence, which hides the colour; the part behind the eyes not quite equalling them in length; the base of the mandibles rufous. The antennæ are stout; the scape covered with fulvous hair, the flagellum with a dull pile; the third joint is twice the length of the fourth. The thorax with the base rounded, the apex with an oblique slope and distinctly narrowed from the middle; covered with long pale fulvous hair; the apex and base broadly black, and covered with black hair. The abdomen is longer than the head and thorax united; the basal segment is black, covered with long white hairs, and sparsely punctured; the base of the second segment is broadly black, the black roundly incised in the middle, the black bearing black hairs, the rest of the segment densely covered with pale fulvous hair, and on the following

segment are two large black marks. The pygidium is black, longitudinally striolate, the sides fringed with fulvous hair; the apex incised. The basal ventral segment with a short keel on the middle only; the other ventral segments densely covered with pale fulvous hair. The legs are covered with hair; the tibial spines long and black.

✓79. **Sphærophthalma ephippiata.**

Nigra; capite, thorace basi et apice, metanoto, abdominis apice maculisque 2 segmento secundo argenteo-pilosis. ♀.
Long. 12 millim.

Hab. MEXICO, North Yucatan (*Gaumer*).

Very similar to *S. arachnoides*, but with the mesonotum entirely black, the pleuræ not densely covered with white hair, the apical abdominal segments entirely black, the basal black mark on the abdomen not roundly incised in the middle at the apex, and the keel on the basal ventral segment raised and separated from the basal part in front.

Head narrower than the thorax, almost transverse behind, with the sides broadly rounded, densely covered with pale fulvous pubescence, which hides the colour; the oral region and the mandibles black, the base of the latter reddish; the part of the head behind the eye equalling them in length. The antennæ are dull rufous; the scape bears long white glistening hairs; the third joint is not much longer than the fourth. The thorax is almost transverse at the base; the apex has a semiperpendicular slope; from the tubercle it becomes gradually (but not much) narrowed towards the apex. The prothorax has a dense covering of long white hairs; the mesonotum is entirely black, and is sparsely covered with long black hairs; the median segment is densely covered with a white pubescence, which hides the sculpture. The mesopleuræ are sparsely, the base of the metapleuræ more densely covered with white hair, the apical half of the metapleuræ without any pubescenee and bearing large deep round punctures. The abdomen is as long as the head and thorax united, and is wider than the thorax; the basal segment is sparsely covered with long white hair, the apex with a dense band of white pubescence, covered with large deep roundish punctures; the second segment is black, except for a narrow band at the apex and two marks of white pubescence on the sides at the base, the black central part having the sides straight; the third segment is covered with white pubescence; the other segments are entirely black. The pygidium is longitudinally striolate and fringed laterally with stiff dull fulvous hair. The basal ventral segment is more or less rufous and rather strongly punctured; the keel is stout, rounded on the top; the base sharply, the apex only slightly oblique. The second ventral segment strongly punctured, sparsely covered with long white hair; the other segments are entirely covered with white hair. Legs black, covered with long white hair, the tips of the tarsi rufous; the tibial spines long and black, the tarsal spines rufous; the calcaria black.

80. **Sphærophthalma araneoides.**

Mutilla araneoides, Smith, Trans. Ent. Soc. Lond. 3rd ser. i. p. 35 (1862) [1]; Gerst. Arch. f. Naturg. xl. p. 68 [2].

Hab. Costa Rica [2]; Panama (*Stretch* [1]).

Mr. C. O. Waterhouse has been good enough to examine for me the type of this species, and he finds it to be a *Sphærophthalma*, with narrow basal segment to the abdomen.

81. **Sphærophthalma waterhousei.**

Mutilla araneoides, Smith, Descr. of New Species of Hymen. p. 223 (1879) (nec Smith, 1862) [1].
Sphærophthalma araneoides, Blake, Trans. Am. Ent. Soc. xiii. p. 256 [2].

Hab. Nicaragua, San Juan del Sur [1 2].

This insect may prove to be inseparable from the preceding; but Mr. Waterhouse informs me that the second *araneoides* differs from the first (from Panama) in being a trifle narrower, especially at the widest part of the abdomen, and it also has the two spots on the posterior part of the thorax white, whereas the Panama specimen has these spots fulvous, *i. e.* of the same colour as the anterior spot.

82. **Sphærophthalma thera.**

Long. 15 millim.

Hab. Mexico, Milpas in Durango 5900 feet (*Forrer*).

Head subquadrate, nearly as wide as the thorax; broadly rounded in front, transverse behind; the part behind the eyes nearly equalling them in length; densely covered all over with long fulvous hair; the mandibles black, ferruginous at the base. The antennæ short, thick, the basal joints brownish beneath; the scape long, thick, bearing pale fulvous hair; the third joint nearly one-half longer than the fourth. The thorax nearly twice the length of the head, black; the base and the apex densely covered with long fulvous hair; the central part has the hair black; the mesopleuræ densely covered with long pale fulvous hair; the metapleuræ coarsely reticulated. The median segment with a sharply oblique slope. The abdomen is distinctly longer than the head and thorax united, and wider than them. The basal segment is wider than long, becoming wider towards the apex; it is coarsely punctured, black, and covered with long fulvous hair. The second segment is coarsely punctured, ferruginous; on the middle is a large trilobate black mark, as in *S. arachnoides*; on either side of the basal lobe is a roundish fulvous mark; the extreme apex of the segment is bordered with fulvous pubescence. The third segment is entirely covered with fulvous pubescence. The fourth and fifth segments are black, with fulvous pubescence at the sides. The pygidium is black, longitudinally striated, the sides with long black hair. The basal ventral segment is black, and covered with long pale fulvous hair, the keel blunt; the second ventral segment is ferruginous, punctured rather strongly, and covered thickly with long pale fulvous hair; the other ventral segments are densely

covered with fulvous pubescence. The legs are ferruginous, the knees and tarsi darker; the tibial spines and the calcaria are black.

This species bears a general resemblance to *S. arachnoides*, but it is larger; the colour of the pubescence all over the body is fulvous (not white); the second abdominal segment is ferruginous, and while the form of the black mark is the same, it has also on either side two fulvous marks; and the legs are reddish, not black.

83. **Sphærophthalma arachnoides.**

Mutilla arachnoides, Smith, Cat. Hymen. Ins. iii. p. 57[1]; Blake, Trans. Am. Ent. Soc. iii. p. 244, fig.[2]
Sphærophthalma arachnoides, Blake, op. cit. xiii. p. 236, fig.[3]

Hab. MEXICO [1 2 3], Cordova (*Höge*), San Blas in Jalisco (*Schumann*), Venta de Zopilote and Rincon in Guerrero (*H. H. Smith*).

The pubescence is described by Smith and Blake as ochraceous, and that is the case with most of the examples I have seen; but in the two specimens from Venta de Zopilote the pubescence is white, without a trace of ochraceous, and these examples further appear to have the thorax more narrowed towards the apex. The antennæ may have the flagellum brownish beneath. In size the species varies considerably.

84. **Sphærophthalma sumichrasti.**

Mutilla sumichrasti, Saussure, Ann. Soc. Ent. Fr. 1867, p. 357, t. 8. figg. 7, 8 (♀ & ♂)[1]; Blake, Trans. Am. Ent. Soc. iii. p. 236, fig.[2]
Sphærophthalma sumichrasti, Blake, op. cit. xiii. p. 222, fig.[3]

Hab. MEXICO [2 3] (*Sumichrast* [1]), Ventanas in Durango 2000 feet (*Forrer*), Dos Arroyos in Guerrero 1000 feet (*H. H. Smith*), Oaxaca (*Höge*).

This species varies in size from 12–14 millim. The black mark on the second abdominal segment as figured by Blake differs from that of any specimen I have seen, as well as from Saussure's figure. The latter, too, figures the second black mark as incised at the base; but in all our examples it is transverse at the base. The third antennal joint is at least twice the length of the fourth.

85. **Sphærophthalma prunotincta.**

Sphærophthalma prunotincta, Cocker. Ent. News, vi. p. 60 (Febr. 1895).

Hab. MEXICO, Guanajuato (*Dugès*).

86. **Sphærophthalma gloriosa.**

Mutilla gloriosa, Saussure, Ann. Soc. Ent. Fr. 1867, p. 359, t. 8. fig. 9[1].
Sphærophthalma gloriosa, Fox, Proc. Calif. Acad. Sci. iv. p. — [2].

Hab. NORTH AMERICA, Cape San Lucas in Lower California [1 2].—MEXICO, Villa Lerdo in Durango (*Höge*).

This species may be easily known by the entire body being covered with very long moss-like hair, which completely hides the colour (except in parts where it is reddish) and

sculpture. The head is a little narrower than the thorax, rounded in front and behind; behind the eyes it is developed less than their length. The form of the keel on the basal ventral segment cannot be made out, it being covered with hair. In our only specimen the pygidium is not covered with hair, is rough in texture, and fiery-red.

✓ 87. **Sphærophthalma melissa.**

Long. 12 millim.

Hab. NICARAGUA, Chontales (*Janson*); PANAMA, Bugaba, Volcan de Chiriqui (*Champion*).

The head, with the eyes, as wide as the thorax, rounded in front and behind; the part behind the eyes not one-half their length; black, the front and vertex densely covered with pale fulvous pubescence; the mandibles black, dull ferruginous towards the middle. The antennæ short, black; the scape with fuscous hairs; the flagellum brownish in the middle beneath, the third and fourth joints subequal. The thorax elongate, narrow, more than twice the length of the head, black; from before the middle a broad band of silvery pubescence runs to the apex; coarsely punctured, covered with short black hair; the sides at the base tuberculate; the mesopleuræ densely covered with silvery pubescence; the metapleuræ coarsely punctured; the apex of the thorax has a long obliquely rounded slope. The abdomen is not quite so long as the thorax and is wider than it. The basal segment is longer than broad and is hardly dilated towards the apex; the base is depressed; coarsely punctured and sparsely covered with silvery hair. The second segment is punctured, sparsely covered with short pale hairs; touching the extreme base are two yellow round marks, and towards the apex are two larger yellow marks, which are broader than long. The fourth and fifth segments are densely covered with silvery pubescence. The pygidium is obscurely striated in the middle; the sides densely covered with long silvery hair. The basal ventral segment has a broad and slightly curved keel, the part between its base and the basal part of the segment forming an incision; the second ventral segment has widely separated punctures and is sparsely covered with long white hair, its apex, as well as that of the other segments, being covered with silvery pubescence. The legs, especially the tarsi, covered with silvery hair; the calcaria and spines black.

✓ 88. **Sphærophthalma icaris.**

Long. 16 millim.

Hab. NICARAGUA, Chontales (*Janson*).

Of similar form to *S. melissa*, but with the four marks on the second abdominal segment reddish-orange (not pale yellow), the basal segment densely covered with silvery pubescence, and the pubescence on the apical segments golden (not silvery); the head is longer behind the eyes; on the sides of the mesonotum at the base are two

distinct tubercles; the space between the keel on the basal ventral segment and the base of the segment does not form an incision.

The head, with the eyes, as wide as the thorax, rounded in front and behind, the front and vertex densely covered with silvery pubescence; the part behind the eyes fully one-half their length; the mandibles entirely black. The scape of the antennæ black, short, very sparsely pilose; the flagellum on the underside reddish, covered with a white microscopic pile; the third joint hardly one-quarter longer than the fourth. The thorax more than twice the length of the head, elongate, gradually narrowed towards the apex, very coarsely punctured, sparsely covered with silvery and black hair; from the middle above a broad band of silvery pubescence runs to the apex; the base is transverse, the sides oblique, with a distinct tubercle at the base and apex, and a smaller tubercle in the middle; the apex has a long, gradually rounded slope; the mesopleuræ thickly covered with silvery hair; the metapleuræ coarsely reticulated. The basal segment of the abdomen is longer than broad, not much widened towards the apex; the base oblique, not hollowed; punctured, thickly covered with silvery pubescence. The second segment is black, covered with silvery hair; the apex fringed with golden pubescence; at the base are two roundish orange-yellow marks, and at the apex are two larger marks, which are wider than long. The third, fourth, and fifth segments are densely fringed with golden pubescence. The pygidium is punctured, the sides densely covered with long golden hair. The keel on the basal ventral segment is stout, oblique at the base and apex; the base above is a little depressed in the middle, the rest very distinctly curved. The second ventral segment has widely separated punctures, and is sparsely covered with white hair; the apex fringed with golden pubescence. The other ventral segments are fringed with golden pubescence. The legs black; the femora and tibiæ sparsely, the tarsi thickly, covered with silvery pubescence.

89. **Sphærophthalma ocyroe.**

Nigra; capite, thoracis apice late, abdominis apice maculisque 2 segmento secundo argenteo-pilosis. ♀. Long. 8 millim.

Hab. Mexico, Rio Papagaio in Guerrero (*H. H. Smith*).

The head a little wider than the thorax, subquadrate in front, completely transverse behind, the sides behind acute, not rounded; apparently black, but the colour hid by dense golden pubescence; the part behind the eyes nearly equalling them in length; the antennal tubercles and the base of the mandibles broadly ferruginous. The antennæ ferruginous, blackish towards the apex; the scape long, thin, curved, sparsely covered with silvery hair; the third joint hardly one-quarter longer than the fourth. The thorax short, not much longer than the head, rather sharply narrowed from the middle to the apex, black; from the middle to the apex thickly covered with golden pubescence; the base rounded, the apex with a rather sharply oblique slope. The

pleuræ are for the greater part ferruginous; the middle thickly covered with silvery hair; the metapleuræ black, reticulated. The abdomen shorter than the head and thorax united and broader than the thorax. The basal segment black above, ferruginous at the sides, coarsely punctured; covered with long white hair, the apex thickly covered with a band of pale golden pubescence; the segment becomes distinctly dilated towards the apex. The second segment is deep black above; towards the middle are two large marks of silvery pubescence, which extend to the sides and are narrowed on the inner side. The third, fourth, and fifth segments are thickly covered with bright silvery pubescence. The pygidium is finely punctured, the sides covered with long pale hair. The basal ventral segment is red; the keel darker at the top, its base and apex bluntly oblique; the other ventral segments are also ferruginous; the second segment is strongly punctured and sparsely haired, the other segments thickly covered with long pale fulvous hair. The legs ferruginous, covered with pale fulvous hair; the tibial spines long and black; the calcaria white; the tips of the tarsal joints blackish.

The following species agree in form and coloration with the group of *S. sumichrasti* &c.; but it wants the black marks on the fore part of the thorax and on the abdomen, the base only of which is black; the metathorax being also black. I am not sure about the colour of the hair, which may be discoloured.

90. **Sphærophthalma connectens.**

Pallide ochracea, longe hirta; metanoto, abdominis basi pedibusque nigris. ♀.

Hab. Mexico, Pinos Altos in Chihuahua (*Buchan-Hepburn*).

The antennæ black, sparsely covered with a pale pubescence; the third joint about one-quarter longer than the fourth. The head coarsely punctured, the upper part densely covered with long pale ochraceous hairs, the lower part has some silvery hairs mixed with the others, and the front has an obscure rufous tinge. The thorax is twice the length of the head, and is narrowed very perceptibly beyond the middle. The pleuræ in front have griseous hairs; behind, the hairs are black. The median segment is covered with long stiff black hairs, and is coarsely reticulated; the pleuræ, except behind the mesopleuræ, being coarsely punctured, the punctures large, deep, and round. The abdomen is as long as the head and thorax united; the petiole is, if anything, broader than long, covered with large deep round punctures, and with long black hairs; the base of the second segment is covered with black hairs, and is punctured; the rest of the abdomen more thickly clothed with pale fulvous hair, which is also more depressed. The pygidial area is black, bare, and rather deeply longitudinally striolated. The second ventral segment is coarsely punctured, and somewhat sparsely

covered with stiff black hairs; the rest of the ventral surface is thickly covered with depressed pale ochreous hairs, which completely hide the sculpture. The coxæ and femora are covered with long, soft, pale hairs; the tarsal hairs are stiffer and black.

The following are the females of this section unknown to me:—

91. **Sphærophthalma canina.**

Mutilla canina, Smith, Cat. Hymen. iii. p. 58[1].
Sphærophthalma canina, Blake, Trans. Am. Ent. Soc. xiii. p. 215[2].

Hab. MEXICO[1 2].

92. **Sphærophthalma combusta.**

Mutilla combusta, Smith, Cat. Hymen. iii. p. 59[1].
Sphærophthalma combusta, Blake, Trans. Am. Ent. Soc. xiii. p. 216[2].

Hab. MEXICO[1 2].

93. **Sphærophthalma vestita.**

Mutilla vestita, Lepel. de St.-Farg. Nat. Hist. Ins., Hymén. iii. p. 634[1].
Sphærophthalma vestita, Blake, Trans. Am. Ent. Soc. xiii. p. 218[2].

Hab. MEXICO[1 2].

94. **Sphærophthalma verticalis.**

Mutilla verticalis, Smith, Cat. Hymen. Ins. iii. p. 63[1].
Sphærophthalma verticalis, Blake, Trans. Am. Ent. Soc. xiii. p. 221[2].

Hab. MEXICO[1 2].

95. **Sphærophthalma pulchra.**

Mutilla pulchra, Smith, Cat. Hymen. Ins. iii. p. 62[1].
Sphærophthalma pulchra, Blake, Trans. Am. Ent. Soc. xiii. p. 222[2].

Hab. MEXICO[1 2].

96. **Sphærophthalma antiguensis.**

Mutilla antiguensis, Fabr. Ent. Syst. ii. p. 367[1]; Syst. Piez. p. 429[2].
Sphærophthalma antiguensis, Blake, Trans. Am. Ent. Soc. xiii. p. 221 (♀, ♂)[3].

Hab. MEXICO[3].—ANTILLES, Antigua[1 2 3].

97. **Sphærophthalma klugi.**

Mutilla klugii, Gray, in Griffith's Anim. Kingd., Ins. ii. p. 516, t. 71. fig. 2[1]; Lepel. de St.-Farg. Nat. Hist. Ins., Hymén. iii. p. 596[2].

Hab. ? MEXICO.—SOUTH AMERICA[1].

I introduce this species on the authority of a MS. note of the late Mr. F. Smith, in which he gives "Mexico" as a habitat.

98. **Sphærophthalma hecate.**

Mutilla hecate, Gerst. Archiv f. Naturg. xl. p. 57 [1].

Hab. Costa Rica (*Mus. Berol.* [1]).

99. **Sphærophthalma microphthalma.**

Mutilla microphthalma, Gerst. Archiv f. Naturg. xl. p. 64 [1].

Hab. Mexico (*Mus. Berol.* [1]).

100. **Sphærophthalma cardinalis.**

Mutilla cardinalis, Gerst. Archiv f. Naturg. xl. p. 64 [1].

Hab. Mexico (*Mus. Berol.* [1]).

101. **Sphærophthalma satrapa.**

Mutilla sutrapa, Gerst. Archiv f. Naturg. xl. p. 65 [1].

Hab. Mexico (*Mus. Berol.* [1]).

102. **Sphærophthalma montezumæ.**

Mutilla montezumæ, Lepel. de St.-Farg. Hist. Nat. Ins., Hymén. iii. p. 634 [1].

Sphærophthalma montezumæ, Blake, Trans. Am. Ent. Soc. xiii. p. 232 [2].

Hab. Mexico [1 2].

103. **Sphærophthalma melanosoma.**

Mutilla melanosoma, Blake, Trans. Am. Ent. Soc. iii. p. 240 [1].

Sphærophthalma melanosoma, Blake, op. cit. xiii. p. 233 [2].

Hab. Panama [1 2].

104. **Sphærophthalma proserpina.**

Sphærophthalma proserpina, Blake, Trans. Am. Ent. Soc. xiii. p. 233 [1].

Hab. Honduras [1].

105. **Sphærophthalma cressoni.**

Sphærophthalma cressoni, Blake, Trans. Am. Ent. Soc. xiii. p. 234, fig. (♀) [1].

Hab. Mexico [1].

106. **Sphærophthalma nortoni.**

Sphærophthalma nortoni, Blake, Trans. Am. Ent. Soc. xiii. p. 234, fig. (♀) [1].

Hab. Mexico [1].

107. **Sphærophthalma toluca.**

Sphærophthalma toluca, Blake, Trans. Am. Ent. Soc. xiii. p. 235, fig. (♀) [1].

Hab. Mexico (*Sumichrast* [1]).

108. **Sphærophthalma ariadne.**

Sphærophthalma ariadne, Blake, Trans. Am. Ent. Soc. xiii. p. 235, fig. (♀)[1].

Hab. Mexico (*Sumichrast*[1]).

109. **Sphærophthalma formosa.**

Sphærophthalma formosa, Blake, Trans. Am. Ent. Soc. xiii. p. 236, fig. (♀)[1].

Hab. Mexico (*Sumichrast*[1]).

110. **Sphærophthalma solola.**

Sphærophthalma solola, Blake, Trans. Am. Ent. Soc. xiii. p. 236[1].

Hab. Guatemala (*Sumichrast*[1]).

111. **Sphærophthalma batopilas.**

Sphærophthalma balopilas, Blake, Trans. Am. Ent. Soc. xiii. p. 188[1].
Sphærophthalma balopilus, Blake, loc. cit. p. 237[2] *.

Hab. Mexico (*Sumichrast*[2]).

112. **Sphærophthalma altamira.**

Sphærophthalma altamira, Blake, Trans. Am. Ent. Soc. xiii. p. 237[1].

Hab. Mexico (*Sumichrast*[1]).

113. **Sphærophthalma xalisco.**

Sphærophthalma xalisco, Blake, Trans. Am. Ent. Soc. xiii. p. 237, fig. (♀)[1].

Hab. Mexico (*Sumichrast*[1]).

114. **Sphærophthalma megacantha.**

Sphærophthalma megacantha, Cocker. & Casad, Ent. News, v. p. 294 (Nov. 1894)[1].

Hab. Mexico, Guanajuato (*Dugès*[1]).

115. **Sphærophthalma dugesi.**

Sphærophthalma dugesii, Cocker. & Casad, Ent. News, v. p. 294[1].

Hab. Mexico, Guanajuato (*Dugès*[1]).

Appears to be nearly related to *S. sumichrasti*.

The following are the undescribed males of this section :—

116. **Sphærophthalma personata.**

Nigra; abdomine ferrugineo, basi nigro; capite et thorace longe albo-hirtis; alis fusco-violaceis. ♂.
Long. 9 millim.

Hab. Mexico, Jalisco (*Schumann*).

* The specific names used by Blake are probably intended for "Batopilas," a place in Chihuahua.

The head not much narrower than the thorax, rounded in front, transverse behind, thickly covered with long griseous hair; the antennal tubercles and the mandibles black; the space behind the eyes not half their diameter. The antennæ black, the scape bearing long white hair; the third joint distinctly shorter than the fourth. The prothorax covered with long griseous hair; the mesonotum covered with shorter black hair; the scutellum and median segment thickly covered with long griseous hair, the groove at the base of the former deep; the median segment has an abruptly rounded slope and is coarsely reticulated. The mesopleuræ are coarsely reticulated, except at the apex; the metapleuræ still more strongly reticulated. The abdomen is longer than the head and thorax united; the petiole is entirely black, coarsely punctured, covered with long white hair; the other segments are much less strongly punctured, ferruginous, covered with long ferruginous hairs; the apical segment is ferruginous, except the extreme apex, which is black, its hair is long, soft, and pale. The ventral segments bear long white hair. The legs are black, and are covered with long white hair. The radial cellule is a little shorter than the first cubital, and does not reach to the apex of the third cubital; the apical abscissa of the radius is a little oblique. The apical part of the wing is darker than the rest.

117. **Sphærophthalma yucatana.**

Nigra; abdominis segmento 2° late auranteo; capite, thorace abdominisque apice albo-hirtis; alis fusco-violaceis. ♂.

Long. 13 millim.

Hab. Mexico, North Yucatan (*Gaumer*).

Head narrower than the thorax, a little rounded in front and behind, densely covered all over with silvery pubescence; the part behind the eyes hardly half their length; the antennal tubercles rufous; the mandibles black. The antennæ shorter than the head and thorax united, stout, black; the scape covered with silvery hair; the third joint shorter than the fourth. The thorax is more than twice the length of the head, and is sharply narrowed behind the points of insertion of the wings. The pronotum is finely and closely punctured, and is densely covered with dull silvery pubescence. The mesonotum is coarsely punctured and covered with longish depressed hair; at its apex laterally it projects into stout, somewhat triangular teeth, the outer sides of which are curved. The scutellum is densely covered with silvery pubescence. The median segment has an abruptly rounded slope; it is strongly reticulated, and the basal half is covered with silvery pubescence. The pleuræ are covered with silvery hair; the mesopleuræ are finely punctured; the apex of the metapleuræ is reticulated. The abdomen is longer than the head and thorax united, and a little longer than the latter; it is black, except a broad orange band, contracted in the middle, in the centre of the second segment; the petiole is coarsely punctured, the base oblique, the hair

long, pale at the base, blackish at the apex; the second segment is coarsely punctured on the black base and apex, where the hair is black; on the orange band the hair is pale; the third and fourth segments are covered with long black hair, the fifth and sixth densely clothed with silvery pubescence all over. The ventral surface is black, except the base of the fourth segment, which is pale yellow; the apices of all the segments are fringed with long silvery hair; the second segment with large punctures; the basal segment strongly punctured laterally, its base and apex oblique, the keel a little depressed in the middle, not raised at the base or apex. The wings are fusco-violaceous, clear at the base and in the middle; the radial cellule short and broad, about as long as the first cubital cellule; the basal abscissa of the radius oblique, the apical abscissa a little curved; at the bottom the first cubital cellule is as long as the second; the first transverse cubital nervure is curved, the second elbowed in the middle; at the top the second cubital cellule is a little longer than the space bounded by the first transverse cubital and the first recurrent nervures; the latter is received in the basal fourth of the cellule; the third cubital cellule reaches near to the apex of the radial; the lower part of the third transverse cubital nervure is indistinct, and reaches near to the second.

118. **Sphærophthalma relata.**

Nigra; capite, thorace abdominisque apice albo-pilosis; abdominis segmento 2° maculis 2 aurantiis; alis fusco-violaceis. ♂.

Long. 12 millim.

Hab. Mexico, North Yucatan (*Gaumer*).

The head distinctly narrower than the thorax, a little rounded in front and behind; covered all over with a dense dull silvery pubescence; the part behind the eyes not half their length; the antennal tubercles rufous; the mandibles black and bearing rather long black hair. The antennæ not much longer than the thorax, black; the scape covered with longish silvery hair; the flagellum with a fuscous down; the third joint a little shorter than the fourth. The thorax is more than twice the length of the head, and half the length of the abdomen; it is a little contracted behind the points of insertion of the wings; black, the pronotum and the scutellum densely covered with dull silvery pubescence; the mesonotum is very coarsely punctured, and covered with stiff black hairs; the depression at the base of the scutellum is wide and deep, and the middle of the scutellum projects into it as a shining, bare, triangular tooth. The median segment has a sharply rounded slope and is coarsely reticulated; the base is covered with a depressed silvery pubescence; and in the middle is an elongated shagreened area, rounded at the apex. The pro- and mesopleuræ bear large, round, widely separated punctures, and are sparsely covered with pale hair; the metapleuræ are coarsely reticulated, and bear long pale hairs. The abdomen is black, except for two large pale orange-yellow maculæ on the apex of the second segment;

the basal segment is longer than wide, and is of equal breadth throughout, its base is oblique, the segment bearing large deep punctures, and sparsely covered with long black hairs; the second segment is moderately strongly punctured, and bears longish, depressed, stiff black hairs; the third and fourth segments are punctured, and covered with long black hair; the fifth segment is densely covered with silvery pubescence; the pygidium is covered with long black hairs, its middle being indistinctly carinate. The ventral surface is entirely black; the keel on the basal segment is distinct, and projects at the base into a blunt triangle; the second segment is moderately strongly punctured, and is sparsely covered with pale hairs; the other segments are much more finely punctured, and more densely covered with longer pale hairs; the hypopygium is more strongly punctured, and is sparsely covered with black hairs, its base is depressed and oblique, the middle bluntly keeled, the keel becoming narrower and more distinct towards the apex. The legs are black, and are covered with silvery pubescence; the calcaria are black. The wings are fusco-violaceous throughout; the radial cellule is elongate, but does not reach the apex of the third cubital cellule; the first abscissa of the radius is sharply oblique, the apical abscissa straight or nearly so; the first cubital cellule is shorter than the radial; the second cubital cellule is much longer than the first, but not longer than the radial; the third cubital cellule is distinct, and is much narrowed at the bottom, where it is hardly half the length of the top of the second cellule; at the top the latter is as long as the space bounded by the first transverse cubital and the first recurrent nervures; the first recurrent nervure is received shortly beyond the basal third of the cellule; the second recurrent nervure is interstitial. The tegulæ are large, longer than wide, and bear large deep punctures.

Characteristic of this species is the tooth on the base of the scutellum.

119. **Sphærophthalma perfidiosa.**

Nigra; abdominis basi late rufo; capite et thorace longe albo-hirtis; alis fumatis. ♂.
Long. 11–13 millim.

Hab. Mexico, Tepetlapa in Guerrero 3000 feet (*H. H. Smith*), San Blas (*Schumann*).

The head nearly as wide as the thorax, slightly rounded in front and behind, punctured, densely covered all over with long dull griseous hair; the space behind the eyes hardly one-half their length; the antennal tubercles and the mandibles black, the latter bearing long white hair. The antennæ shorter than the head and thorax united, stout, black; the scape covered with long pale hair; the third joint a little longer than the fourth. The thorax is more than twice the length of the head, not much narrowed behind; the pronotum densely covered with a silvery pubescence and with long silvery hair; the mesonotum coarsely punctured and covered with long fuscous hair; the scutellum covered with long silvery hair; the median segment with a rounded slope and reticulated, the base with a dense, short, pale fulvous pubescence, the rest of the

segment having long silvery hairs; the mesopleuræ rather strongly punctured and covered with pale pubescence; the metapleuræ strongly and deeply reticulated. The abdomen is dull ferruginous, blackish towards the apex; the petiole longer than broad, dilated towards the apex, strongly punctured, and covered with long silvery hair; the second segment is also punctured, and has the basal half covered with silvery, and the apical half with blackish hair, the extreme apex fringed with long pale golden hair, this being also the case with the third segment; the fourth and fifth segments are covered with long black hair; the pygidium is strongly punctured at the base, and bears long, pale, golden hairs. The ventral surface is coloured like the dorsal surface; the basal segment is strongly punctured, and the keel is stout and has a slight gradual curve on the top; the second segment has widely separated punctures, and bears rather long fuscous hair; the other segments at the apex are fringed with long pale golden hair; the terminal segment is strongly punctured. The legs are black and covered with pale silvery hair; the calcaria are white. The wings smoky, darker towards the apex; the radial cellule does not reach to the apex of the third cubital cellule; the first abscissa of the radius is oblique, the apical one distinctly curved; the first cubital cellule is hardly so long as the radial, and is sharply lanceolate at the base; the first transverse cubital nervure is slightly and the second more distinctly elbowed below the middle; at the top the second cubital cellule is a little less than the space bounded by the first transverse cubital and the first recurrent nervures, the latter is received a little beyond the basal third of the wings; the third transverse cubital nervure is distinct but faint throughout, this being likewise the case with the second recurrent nervure, which is received in the middle of the cellule.

The example from San Blas has the wings much darker and more violaceous in tint, the base, too, not being lighter-coloured; the first cubital shorter and not so sharply lanceolate at the base; and the first recurrent nervure received nearer the middle of the cellule. It is also smaller, but otherwise I cannot find any difference between it and the Tepetlapa specimen, from which the description is taken.

120. **Sphærophthalma guerreroensis.**

Long. 8 millim. ♂.

Hab. MEXICO, Chilpancingo in Guerrero 4600 feet (*H. H. Smith*).

Except that the petiole is entirely black, this species agrees in coloration with *S. perfidiosa*; but it is 3 millim. less in length, the pubescence on the head is much less dense, and it is more strongly and more distinctly punctured; and the third transverse cubital and the second recurrent nervures are obliterated entirely.

Head as wide as the thorax, transverse in front, rounded behind; black, coarsely punctured, covered sparsely with a dull silvery pubescence and with rather long fuscous

hairs; the antennal tubercles and the mandibles black; the portion of the head behind the eyes fully half their length. The antennæ black; the scape punctured and sparsely covered with silvery hairs; the flagellum with a fuscous down; the third joint distinctly shorter than the fourth. The thorax is more than twice the length of the head; the pronotum covered with dull silvery pubescence, but not so thickly as to hide the punctures; the mesonotum coarsely punctured, covered with long black hairs; the scutellum coarsely punctured, sparsely covered with long black hairs; the median segment with a gradually rounded slope, reticulated, covered with very long fuscous hair. The pro- and mesopleuræ are coarsely punctured and covered with long white hair; the apex of the median segment coarsely reticulated and bearing some long white hair. The petiole becomes gradually dilated to the apex; black, very coarsely punctured, and covered with long white hairs. The second abdominal segment moderately strongly punctured and covered with black hairs; its apex and the apex of the third segment fringed with long pale golden hair; the fourth and following segments entirely black; the fourth segment coarsely punctured and bearing laterally long black hair; the pygidium punctured, and fringed at the sides with long fuscous hair.

121. **Sphærophthalma aspasia.**

Longe fulvo-hirta; antennis, capite, corpore subtus pedibusque nigris; alis fusco-violaceis. ♂.
Long. 13 millim.

Hab. Mexico, near the city (*Höge*).

Head narrower than the thorax, coarsely punctured, rounded in front, the part behind the eyes less than their length; black, covered with long black hairs; the vertex with long ferruginous hair. The antennæ longer than the head and thorax united, black; the scape shining, covered with long black hairs; the flagellum with a fuscous down; the third and fourth joints equal. The thorax slightly widened towards the middle, black; the pro- and mesonotum, with the scutellum, covered with long ferruginous hair, as on the vertex of the head. The pleuræ coarsely reticulated and sparsely covered with long black hair. The median segment coarsely reticulated and covered with long black hair; it has a rounded slope above. The abdomen longer than the head and thorax united, black; from the middle of the second segment covered all over with long ferruginous hair; the petiole narrowed at the base, covered with long black hair; the base of the second segment coarsely punctured, covered with long, black, somewhat depressed hair. The pygidium is indistinctly keeled in the middle; black, shagreened, almost hidden by the long ferruginous hair of the fifth segment. The basal ventral segment shining, bearing large deep punctures; the keel only reaching to the middle, becoming gradually raised to its apex, which hardly projects; the apical half of the segment with an oblique slope. The second ventral segment has large widely-separated punctures, and is sparsely covered

with black hairs; the other ventral segments are finely transversely striated at the base, the apex with smaller punctures than on the second segment; all the segments at the apex are fringed with long black hairs; the hypopygium offers no noteworthy peculiarity. The legs black and covered with black hair, the calcaria being also black. The wings smoky, the apical portion from the apex of the radial cellule being darker and more uniformly coloured; the radial cellule wide, projecting beyond the apex of the third cubital cellule; the basal abscissa of the radius oblique and, if anything, longer than the apical abscissa, which is only very slightly oblique, being almost straight; the first cubital cellule is shorter than the radial and at the bottom is, if anything, shorter than the second; the first and second transverse cubital nervures are bluntly elbowed at the bottom; the top of the second cubital cellule is a little longer than the space bounded by the first transverse cubital and the first recurrent nervures, the latter being received near the basal fourth of the cellule; the third cubital cellule is only indicated by the stump of the third transverse cubital nervure at the top. The tegulæ are very shining, smooth, and broad.

122. **Sphærophthalma rodriguezi.**

Nigra; capite, prothorace, scutello abdominisque apice late auranteo-hirtis; abdominis segmento 2° fere toto auranteo; pedibus nigris; alis fuscis. ♂.

Long. 10 millim.

Hab. GUATEMALA, Capetillo (*Champion*).

Head a little narrower than the thorax, rounded in front and behind, the part behind the eyes only a little shorter than them, black; the top to the points of insertion of the antennæ densely covered with long pale fulvous hair; below the antennæ the hair is long and black; the mandibles are entirely black. The antennæ are shorter than the head and thorax united, black; the scape punctured and covered with long black hair; the second joint is also covered thickly with stiff black hair; the flagellum with a fuscous down; the third and fourth joints are subequal. The thorax is black; the pronotum and the scutellum thickly covered with long pale fulvous hair; the mesonotum rugose and covered with stiff black hairs. The median segment has an abrupt oblique slope; it is coarsely reticulated and covered with very long pale hairs. The pleuræ have large, deep, round punctures, except the base of the metapleuræ, which has only one or two; they are covered with long pale hairs, as on the median segment. The abdomen is as long as the head and thorax united, and is wider than the thorax. The petiole becomes gradually wider to the apex; it bears large, deep, wide punctures, and is covered with long pale hairs. The second segment is finely punctured; the base and apex are black, the black projecting in the middle, especially on the apical patch, which is the larger of the two; the centre is orange; the black parts are covered with black, the orange part with orange hairs; the extreme

apex, and all the other segments also, thickly covered with long rufo-fulvous hair. The pygidium is black. The ventral segments are entirely black, and are sparsely covered with long pale hair; the basal segment has no keel, the centre being quite flat, and is coarsely punctured; the second segment is strongly, the others at the apex finely, punctured. The legs are black, and are covered with long, soft, pale hairs; the calcaria are black. The wings are smoky, lighter coloured in the centre; the radial cellule is wide and projects a little beyond the third cubital; the first abscissa of the radius is straight and oblique, the apical abscissa very slightly curved, especially beneath; the first cubital cellule is a little longer than the radial; the first transverse cubital nervure is curved, the second oblique; at the top the second cubital cellule is about the same length as the space bounded by the first transverse cubital and the recurrent nervures, the latter being received in the basal third of the cellule; the third transverse cubital nervure is broken off near the top.

123. **Sphærophthalma thalia.**

Nigra; abdomine ferrugineo, basi et apice nigris; capite, prothorace, metanoto, mesopleuris petioleque longe albo-hirtis; alis fuscis. ♂.

Long. 15 millim.

Hab. Mexico, Chilpancingo 4600 feet and Venta de Zopilote 2800 feet, both in Guerrero (*H. H. Smith*).

Head distinctly narrower than the thorax, rounded in front and behind, densely covered all over with long greyish hair; the mandibles and the antennal tubercles black. The antennæ are shorter than the head and thorax united, punctured, covered with long white hair; the third and fourth joints are subequal. The thorax is more than three times the length of the head; the prothorax densely covered with dull griseous pubescence; the mesonotum covered with black depressed hair, coriaceous; the scutellum covered with long griseous hair; the median segment with a gradual rounded slope, and covered all over with griseous hair, which hides the sculpture. The pleuræ densely covered with griseous hair; the metapleuræ reticulated, and with the hair longer. The abdomen ferruginous, except the basal and apical segments, which are black. The basal segment longer than broad, becoming dilated towards the apex; coarsely punctured and covered with long pale hair; the second segment closely punctured and thickly covered with long pale hair; the apices of the segments fringed with rufous hair; the pygidium black, coriaceous, and fringed with long stiff hair. The basal ventral segment black, punctured; the basal half of the keel straight, the apical half raised gradually to the apex. The second ventral segment strongly punctured and covered with pale hair; the third and fourth segments thickly covered with longer pale hair; the fifth and sixth segments black, punctured, and covered with long black hair.

The legs are black, and densely covered with white hair. The wings fusco-hyaline, paler towards the base; the radial cellule wide, not reaching to the apex of the third cubital cellule, its apex truncated; the first cubital cellule longer than the radial cellule, but shorter on the lower side than the second; the second cellule at the top is a little less than the space bounded by the first transverse cubital and the first recurrent nervures; the first and second transverse cubital nervures are roundly elbowed; the first recurrent nervure is received in the basal fourth of the cellule; the third cubital cellule is sharply angled above the middle, and is much narrowed at the bottom; the second recurrent nervure is joined to the third transverse cubital nervure.

124. **Sphærophthalma melanogaster.**

Long. 11 millim. ♂.

Hab. Mexico, North Yucatan (*Gaumer*).

Identical in coloration with *S. thalia*, except that the ventral surface is entirely black, but much smaller, and having the second cubital cellule at the bottom not longer than the first, and otherwise easily separated by the apex of the first ventral segment being curved and less developed than the base.

The head not much narrower than the thorax, covered all over with a dense greyish pubescence, and with long fuscous hairs; behind the eyes it is not developed half their length; the antennal tubercle and the mandibles black. The antennæ stout, black, as long as the head and thorax united; the scape thickly covered with long white hair; the third and fourth joints subequal. The thorax is not three times the length of the head; the pronotum covered all over with greyish hair; the mesonotum coarsely punctured and covered with black hair; the scutellum thickly covered with long grey hair, the median segment being also covered with long white hair and coarsely reticulated. The abdomen is much longer than the head and thorax united; deep orange, except the base and apex and the greater part of the ventral surface, which are black. The petiole is slightly but gradually dilated to the apex, coarsely punctured, and covered with long, soft, white hair; the apex of the sixth and the whole of the apical segment are covered with black hair; the third and fourth ventral segments are obscure piceous at the base. The wings are short and paler at the base. The second transverse cubital nervure is roundly, the third more sharply, elbowed; the third a little above the middle forming an acute angle, and the lower part of the nervure almost obliterated. The first recurrent nervure is received in the basal third of the cellule, the second apparently interstitial.

The following species of this section have been described from the male sex only, and are unknown to me:—

125. **Sphærophthalma andreniformis.**

Mutilla andreniformis, Smith, Cat. Hymen. Ins. iii. p. 55 (♂) [1].
Sphærophthalma andreniformis, Blake, Trans. Am. Ent. Soc. xiii. p. 223 [2].

Hab. Mexico [2], Vera Cruz [1].

126. **Sphærophthalma apicalata.**

Mutilla apicalata, Blake, Trans. Am. Ent. Soc. iii. p. 238 (♂) [1].
Sphærophthalma apicalata, Blake, op. cit. xiii. p. 230 [2].

Hab. Mexico (*Sumichrast* [1 2]).

127. **Sphærophthalma azteca.**

Mutilla azteca, Blake, Trans. Am. Ent. Soc. iii. p. 240 (♂) [1].
Sphærophthalma azteca, Blake, op. cit. xiii. p. 232 [2].

Hab. Mexico (*Sumichrast* [1 2]).

128. **Sphærophthalma iztapa.**

Mutilla iztapa, Blake, Trans. Am. Ent. Soc. iii. p. 241 (♂) [1].
Sphærophthalma iztapa, Blake, op. cit. xiii. p. 233 [2].

Hab. Honduras [1].

Blake [2] suspects that this may be the male of *S. proserpina*.

129. **Sphærophthalma foxi.**

Sphærophthalma foxi, Cocker. Ent. News, v. p. 199 (♂) [1].

Hab. Mexico, Juarez in Chihuahua (*Cockerell* [1]).

The following species are at present of uncertain generic location. *S. orizaba* was referred by Blake to his genus *Photopsis* (=*Agama*, olim, *cf.* Blake, Trans. Am. Ent. Soc. 1886, p. 179). At present only males are known, but possibly the female may be represented by the apterous genus *Chyphotes*, Blake (Trans. Am. Ent. Soc. 1886, p. 276).

Fox (Proc. Calif. Acad. Sci. iv. (2) p. —) splits up *Photopsis*, Blake, into two, referring one part to *Sphærophthalma* and the other to his own genus *Brachycistis*; the latter being distinguished by having the pronotum placed some distance below the

level of the dorsulum, which is also much more strongly convex; the stigma larger; the middle tibiæ with only one spur; and the recurrent nervures received by the second and third cubital cellules, instead of both being received by the second.

The species are very similar in the coloration of the body, being, as a rule, of a uniform brownish tint and without much, if any, sculpture, this being also the case with *Brachycistis*. In both groups the abdomen may have a long or a short peduncle; and the wings may have two or three cubital cellules. The stigma is larger than in the typical *Sphærophthalma*.

So far as is known the species are nocturnal in their habits and come to light at night. Hitherto they have been found chiefly in the southern parts of the United States and in Mexico.

In the arrangement of the species I have followed Blake as far as possible.

130. **Sphærophthalma orizaba.**

Agama orizaba, Blake, Trans. Am. Ent. Soc. iii. p. 259 [1].
Photopsis orizaba, Blake, op. cit. xiii. p. 260 [2].

Hab. Mexico [1 2].

This species has only two cubital cellules; the others here enumerated having three. I am not sure if it is to be referred to the genus *Edrionotus*, Radoszk., which has only two cubital cellules, with the abdomen subsessile. As defined by Radoszkowsky, *Photopsis* has only two cubital cellules.

131. **Sphærophthalma œax.**

Ferruginea, longe albo-hirta; abdomine nigro, albo-hirto, basi apiceque ferrugineis; alis hyalinis, stigmate nigro. ♂.
Long. 9 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

The head is a little narrower than the thorax, ferruginous, the ocelli in a black patch; covered all over with widely separated and not very deep round punctures; the vertex and front bearing long fuscous hair; the oral region and the base of the mandibles covered with long white hair; the tips of the mandibles blackish. The antennæ are as long as the head and thorax united, fuscous, the basal two joints ferruginous; the third joint a little longer than the fourth; the scape covered with long white hair, the flagellum with a short close fuscous pubescence. The thorax is wider than the head, covered, but not very closely, with long white soft hair; above not very distinctly punctured; the mesopleuræ more strongly punctured; the metapleuræ indistinctly reticulated; the median segment distinctly and regularly reticulated,

with a rounded slope, and covered with long white hair. The abdomen longer than the head and thorax united; the petiole twice as long as broad, dilated towards the apex, closely punctured, and covered with long soft white hair, which is darker in tint on the upper than on the lower side, ferruginous in colour like the thorax; the rest of the abdomen deep black, covered, especially at the apex of the segments, with long soft white hair; the second segment above and beneath is indistinctly punctured. The legs are of a darker ferruginous tint than the thorax, the four hinder femora and the tibiæ more or less blackish, and are covered with long white soft hair. The wings are hyaline, very slightly suffused with a smoky tint below the stigma; the stigma and the costa immediately beyond the radial cellule deep black. The apex of the radial cellule is rounded, and extends beyond the apex of the third cubital cellule; the first and second transverse cubital nervures are distinctly traced and are curved, the third is rather faint, but still visible; the recurrent nervure is received in the basal third of the cellule.

132. **Sphærophthalma gamelia.**

Long. 11 millim. ♂.

Hab. GUATEMALA, Capetillo (*Champion*).

Similar in coloration to *S. æax*, except that the antennæ at the base are coloured like the flagellum; the legs bear much more black on the femora and tibiæ; the petiole is longer, and is not so much dilated towards the apex, the apical half also being black; the wings are darker in tint; and the radial cellule is larger compared with the cubitals.

The head is nearly as wide as the mesothorax; the vertex indistinctly punctured; the front almost impunctate, depressed in the centre; the whole head covered with long pale fuscous hair. The antennæ are nearly as long as the head and thorax united; black, the extreme base only being rufous; underneath, the flagellum is duller in tint and it bears an indistinct pile; the pile on the scape is longer and paler; the third and fourth joints are subequal. The thorax is rufous, covered with long pale fuscous hair; the pronotum finely, the mesonotum much more strongly punctured, and with the parapsidal furrows distinct and deep; the mesopleuræ not very strongly punctured; the metapleuræ and the median segment reticulated. The abdomen is distinctly longer than the head and thorax united, deep black, except the petiole, which is rufous at the basal half; the petiole is more than twice as long as broad, and not much dilated towards the apex; the petiole and the second segment covered, but not thickly, with long fuscous hair; the edges of the other segments fringed with long white hair; the basal segment indistinctly punctured, the others impunctate; the ventral segments are fringed with long white hair. The legs are black and covered with long soft white hair; the tarsi with the hair closer and shorter; the calcaria are fuscous. The wings

are hyaline, with a faint fuscous tinge; the stigma is deep black; the radial cellule is hardly so long as the first and second cubital cellules united, the radius roundly curved at its apex; the first cubital cellule is sharply angled at the base; the first recurrent nervure is received not far from the middle of the cellule; the third transverse cubital nervure is almost obliterated, being very faint, beneath it is narrowed and bluntly angled in the middle.

133. **Sphærophthalma diœtus.**

Long. 10 millim. ♂.

Hab. MEXICO, Tres Marias Is. (*Forrer*).

Almost identical in coloration with *S. œax*, but differing from it in the abdomen being much less pilose, the second segment almost glabrous (whereas in *S. œax* it is covered all over with long pale hair); the petiole a little longer compared with the second segment and not so stout towards the apex; the wings shorter compared with the body; the reticulation on the median segment more distinct, the segment itself with a somewhat more gradually rounded slope.

The head is not much narrower than the thorax and is abruptly contracted behind the eyes; smooth, shining, very indistinctly and finely punctured, and not very thickly covered with long fuscous hair. The pit in front of the ocelli is deep, moderately wide, and curved. The mandibles are entirely ferruginous, punctured at the base, and covered with long white hair. The antennæ are stout, black, except the basal two joints, which are ferruginous; the scape is sparsely covered with pale fuscous hair; the flagellum is closely covered with white pubescence; the third joint is at least one-quarter longer than the fourth. The thorax is shorter than the abdomen and thicker than it; the mesothorax is covered with long fuscous, the metathorax with long white hair; the hair on the prothorax being also long, soft, and white. The punctuation on the prothorax is fine and close, on the mesonotum it is much coarser; the median segment has a gradually rounded slope and is reticulated all over. The mesopleuræ are punctured; the metapleuræ, except at the base, are reticulated. The petiole is gradually dilated towards the apex, and is not much shorter than the second segment; it is rather strongly punctured and covered with long white hair. The other abdominal segments are all deep black, smooth, shining, and impunctate, and fringed at the apices with long soft white hair. The legs are black, the coxæ and trochanters ferruginous, the calcaria fuscous; they are covered all over with long white hair, that on the femora being longer and sparser. The wings are almost hyaline, the nervures fuscous, the stigma nearly black; the radial cellule is as long as the first and second cubital cellules united; the radial nervure is curved at the base and apex; the first transverse cubital nervure is oblique, the second somewhat roundly curved at the top, the third obliterated or but very faintly indicated; the cubital nervure is obliterated

beyond the second transverse cubital nervure; the recurrent nervure is received shortly before the middle of the cellule, the cubital nervure being angled where the recurrent nervure is received.

134. **Sphærophthalma ictinus.**

Ferruginea, abdomine nigro-fusco, longe albo-pilosa; thorace dense punctato, segmento mediali reticulato; alis hyalinis, nervis pallide fuscis. ♂.

Long. 9 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

The antennæ are as long as the thorax, pale ferruginous; the flagellum bare, paler in tint than the scape; the third and fourth joints subequal. The head is not much narrower than the mesothorax, narrowed behind the eyes, where it is developed a little longer than their length, the sides rounded; it is covered with long pale hair, and is indistinctly punctured and shining; there is a furrow round the ocelli. The mandibles have the tips black; the base is covered with long white hair. The thorax is covered all over with long white soft hair. The mesonotum is rather strongly punctured, but with the punctures clearly separated; the parapsidal furrows deep. The scutellum is also strongly punctured and has thick hair. The median segment has a gradually rounded slope; above it is strongly reticulated and covered with long white hair. The pleuræ are reticulated, except the part between the meso- and metapleuræ, which is smooth, shining, and glabrous; they are elsewhere covered with long soft fuscous hair. The abdomen is nearly as long as the head and thorax united, and distinctly wider than the latter. The petiole is gradually dilated towards the apex; its punctuation is very obscure, if not obsolete, and it is sparsely covered with long white hair. The second segment is not much longer than the petiole; smooth, shining, and impunctate, covered all over, as are also the other segments, but much more thickly, with long white hair. The ventral segments are smooth, shining, and impunctate, and covered with long soft white hairs. The wings are clear hyaline, without any smoky tinge; the nervures are pallid testaceous, the costa and the stigma having a deeper and darker tint; the radial cellule is a little shorter than the first and second cubital cellules united; the first transverse cubital nervure is curved, the second is straight and slightly oblique; the recurrent nervure is received in the basal third of the cellule; the transverse basal nervure is almost interstitial. The legs are of a paler testaceous tint than the body, being pallid yellowish-testaceous, with the apex of the hind tibiæ and the four hinder tarsi for the greater part blackish; the calcaria are blackish.

The following (*S. coæqualis*) is a well-marked species. The antennæ are short and thick; the entire body is densely covered with long white hair; the thorax is coarsely punctured; the abdomen is elongate and with a rather long petiole; the legs are more

or less infuscated; the wings do not reach the apex of the abdomen, the third transverse cubital and the second recurrent nervures are obliterated entirely, and the cubital nervure is also obliterated at the second transverse cubital nervure. In some respects it agrees with *S. paron*, *e. g.* in having only two transverse cubital nervures; but its body is narrower and more elongated, and the petiole is longer and narrower and not so much dilated towards the apex.

In *S. coæqualis* (♂) the outer piece of the ædeagus is narrow, sharply pointed, and curved at the top; at the curve on the inner side it bears long hair; the volsella is long, narrow, reaches near to the top, and is marked with some stiff bristles.

135. **Sphærophthalma coæqualis.**

Ferruginea, longe fusco-hirta, abdomine fusco-maculato; femoribus tibiisque posterioribus fuscis; alis hyalinis, nervis pallidis, stigmate fusco. ♂.

Long. 13 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

The head is distinctly narrower than the thorax, narrowed and rounded behind, not much developed behind the eyes; punctured, but not roughly, and with the punctures distinctly separated, shining, covered with long soft white hair; the ocelli in a black spot and with a semicircular furrow in front; the tips of the mandibles black. The antennæ are not much longer than the head and thorax united, very little attenuated towards the apex; rufous, covered with a white down and long white hair, the scape paler; the third and fourth joints subequal. The pro- and mesonotum not very shining, rather strongly punctured, covered with long pale soft hair; the propleuræ strongly punctured, almost reticulated; the mesopleuræ much less strongly punctured and with the punctures widely separated. The median segment has a gradually rounded slope, and is covered with long pale fuscous hair; the back reticulated; the sides rather strongly punctured, except at the base, where there is a smooth shining space. The petiole is a little shorter than the second abdominal segment; it is gradually widened towards the apex and without a distinct neck at the base; very coarsely punctured and covered with long pale fuscous hair. The other segments are scarcely punctured, sparsely covered with fuscous hair, and black at their apices. The petiole beneath is punctured somewhat strongly, keeled down the edges, and covered with long pale hair; the other segments are impunctate beneath, at most only obscurely shagreened, very sparsely haired, and blackish at the apices; the apical segment is keeled at the tip, and also, but more obscurely, along the sides. The legs are covered with long white hair; the anterior pair are paler than the others, and have no black on them; about three-fourths of the middle femora and the greater part of the hinder femora are blackish; the four hinder tibiæ are dark fuscous; the calcaria are blackish. The wings are clear hyaline and reach near to the apex of the abdomen; the costa and nervures are pale testaceous, almost pale yellow; the stigma is fuscous; the base and apex of the

radius is oblique; the first recurrent nervure is received in the basal third of the cellule; the third transverse nervure is completely obsolete, except a very obscure stump at the top; there is only one recurrent nervure; the basal nervure is not interstitial.

The fact of this species (and the same may be said of others) having the stump of the third transverse cubital nervure indicated at the top, shows that the number of marginal cellules in this group cannot be used as a generic character, and must even be used cautiously in splitting up the genus into sections; for even in the same species we find this nervure much more faintly traced in some specimens than in others. The same remark applies to the absence of the second recurrent nervure, which shows an equal tendency to become obsolete, it being fainter in some specimens than in others of the same species.

The following species (*S. lacuna*) has the abdomen shorter and broader than in any of the other members of this section here described, it being, if anything, shorter than the head and thorax united; the petiole is more than half the length of the abdomen, much narrowed at the base, and broadly dilated at the apex, the dilated part not being much narrower than the thorax; the depression on the sternum is deep and wide, particularly towards the apex, in front of the coxæ it is very deep, the base of the depression being oblique, on the inner side it is separated from the central longitudinal furrow by a sharp keel.

136. **Sphærophthalma lacuna.**

Long. 10 millim. ♂.

Hab. Mexico, Northern Sonora (*Morrison*).

The head very slightly narrower than the mesothorax, deep black, shining, impunctate, almost glabrous, the clypeus and mandibles ferruginous, the tips of the latter black; behind the eyes it is narrower, not half their length, and rounded. The ocelli are prominent; a furrow surrounds the anterior ocellus and from the centre of this furrow a straight keel runs to the antennæ. The antennæ ferruginous, covered with a pale microscopic down; the basal joint stout, sparsely covered with longish white hair; the third and fourth joints equal in length (the joints beyond the sixth broken off). The thorax shining, almost impunctate, sparsely covered with white hair; the parapsidal furrows reaching to the scutellum, but not to the pronotum; there is a transverse furrow at the base of the scutellum, which is flat and very shining. The median segment has a gradually rounded slope to the apex, smooth, shining, impunctate, or, at most, faintly shagreened. The pleuræ smooth, shining, sparsely covered with soft white hair. The abdomen is shorter than the head and thorax united; the basal third of the petiole

narrow, the apical two-thirds dilated to more than twice the breadth of the base and longer than the median segment. The rest of the abdomen somewhat ovate, shining, impunctate, sparsely clothed (more thickly towards the apex) with long soft white hair. Beneath, the petiole is somewhat triangular, smooth, almost glabrous; the other segments are impunctate, very shining, and sparsely pilose. Except that the tibiæ are paler, the legs are ferruginous and very sparsely haired; the anterior femora have a paler, more yellowish tint than the others. The wings extend fully two millimetres beyond the apex of the abdomen and are clear hyaline, the stigma black, the nervures also dark; the stigma is longer than the radial cellule; the basal abscissa of the radius is oblique, its apex also slightly oblique, with a short fork issuing from its base; the first and second transverse cubital nervures converge at the top, but do not quite unite, and are both oblique; the third transverse cubital nervure is only very slightly oblique and is a little curved; the cubital nervure ends at the apex of the third cubital cellule; the first recurrent nervure is received in the basal third of the cellule, the second nearly in the centre; both the recurrent nervures are curved.

The following three species are very closely related; they have only one recurrent and two transverse cubital nervures, the second recurrent nervure being obliterated. They are thickly covered with long white hair; the antennæ and legs are pallid yellow; the apical half of the abdomen is infuscated; and the median segment is strongly reticulated. I have only seen males of each species.

1 (2). The breast with two tufts; mesonotum coarsely punctured . . *paron.*
2 (1). The breast without tufts; mesonotum reticulated . . . . . *eubule, phylacis.*

137. **Sphærophthalma paron.**

Ferruginea, abdominis apice late nigro, longe albo pilosa; pedibus pallide flavo-testaceis, apice tibiarum tarsisque posticis nigris; alis hyalinis, stigmate testaceo, nervis pallide flavis. ♂.
Long. 14–15 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

The head is a little narrower than the mesothorax, sparsely punctured, more strongly on the front, covered with long pale fuscous hair; the mandibles covered with long pale yellow hair, the tips black; the hind ocelli bordered by a deep furrow behind; the posterior edge of the head is rounded behind, where it is developed more than the length of the eyes. The antennæ are entirely pale yellow; the scape with long white hair; the flagellum almost bare; the basal joint curved; the third and fourth joints subequal. The thorax is covered all over with long white hair. The mesonotum is strongly punctured; the longitudinal furrows are distinct; the scutellum is more rugose and more closely punctured than the mesonotum, and has the hair longer, the transverse furrow at its base distinct and deep. The median segment has a gradually

rounded slope; it is coarsely reticulated and sparsely covered with long white hair; in the centre at the base is a small area longer than broad, keeled down the sides and down the middle, the enclosed space being quite smooth. The propleuræ are coarsely reticulated; the mesopleuræ are coarsely punctured, and have a depressed, longitudinal space in the middle; the apex and base of the metapleuræ are smooth, impunctate, shining, the rest of the metapleuræ reticulated. The sternum behind the fore legs sharply depressed, gradually raised towards the apex, and terminating in two stout, sharply pointed teeth in the middle. The abdomen is not much longer than the thorax, shining, densely covered with long white hair, the posterior segments being densely fringed with it. The petiole is very shining, the apex hardly punctured; sparsely covered with long white hair; beneath, it is rugosely punctured. The second ventral segment is impunctate, the sides broadly black; the apical ventral segment is rather weakly punctured and has a slight depression in the centre towards the apex. The legs are pale yellow, except the apex of the four hinder tibiæ and the tarsi, which are blackish; the hair is long and white. The wings are uniformly clear hyaline, the nervures pallid yellow, the stigma testaceous; the radial cellule is twice the length of the stigma; the first transverse cubital nervure is distinctly, the second very slightly, curved; the first recurrent nervure is received towards the basal third of the cellule, the second is obliterated entirely; the cubital nervure does not extend beyond the second transverse cubital nervure.

This species approaches *S. eubule*, but it is larger and stouter; the mesonotum is coarsely reticulated, not punctured, and is without furrows; the head is much more developed behind the eyes; the underside of the petiole is strongly punctured; and the sternum has two teeth.

138. **Sphærophthalma phylacis.**

Long. 13 millim. ♂.

Hab. Mexico, Northern Sonora (*Morrison*).

Almost identical in coloration with *S. paron*, but easily known from it by the absence of the teeth on the sternum. The head not quite so wide as the mesothorax, shining, covered with long white hair, bearing moderately large punctures at the sides; the vertex almost impunctate, behind with a distinct margin; the ocellar space not raised above the rest of the vertex, the space between the ocelli closely and finely punctured; behind the eyes the head is as long as they are and rounded. The mandibles are rufous, the tips black; sparsely covered with long white hair. The antennæ are stout, nearly reaching to the apex of the scutellum; the scape sparsely covered with long white hair; the flagellum almost bare, or, at most, with a white pile; the third joint is shorter than the fourth. The thorax is covered all over with long white hair; coarsely punctured, the punctures running into reticulations at the apex; the lateral furrows are almost obliterated by the punctures. The scutellum coarsely, rugosely

punctured; the hair on it longer than on the mesonotum; at the base is a rather deep transverse furrow. The median segment has an oblique slope, the top rounded; reticulated all over; at the base in the centre is a small area wider than long and divided in the centre by a straight keel. The pro- and mesopleuræ are coarsely and closely punctured; the metapleuræ smooth, impunctate, and excavated at the base, the rest reticulated. The abdomen is as long as the head and thorax united; the petiole not quite so long as the second segment, impunctate, covered with long white hair, gradually dilated towards the apex; the other segments smooth and impunctate, their apices densely fringed with white depressed hair, the other portions being covered with longer more erect hair; the pygidial area finely and closely rugose, fringed laterally with long white hair, the centre forming a well-marked space, somewhat acutely pointed at the base, the apex transverse. The basal ventral segment is punctured, the punctures large and widely separated; the central part projecting, terminating in a blunt edge; the sides have two keels. The following ventral segments are impunctate, more or less infuscated, their apices densely fringed with long white hair, the other parts having also long white hair; the apical segment with widely separated punctures, the apex in the centre depressed, sparsely covered with long white hair. The legs are pale yellow, covered with long white soft hair; the tarsal joints slightly infuscated at the apex; the long spur of the hind tibiæ reaches beyond the middle of the metatarsus. The radial cellule is twice the length of the stigma. The radius commences at the basal third of the stigma; at the base it is oblique, but the oblique part is not clearly separated from the rest; at the apex it is rounded. The base of the second cubital cellule is almost triangular. The first transverse cubital nervure is a little curved and is longer than the first abscissa of the cubitus. The first (and only) recurrent nervure is received in the basal third of the cubitus, which is angled where it is received; the cubitus is obsolete beyond the second transverse cubital nervure.

S. phylacis is closely allied to *S. eubule*, of which it may be a form; but, judging from the material at my command, the present insect is larger and stouter; the antennæ are thicker, with the third joint longer, compared with the fourth; the mesonotum is not so strongly punctured; the scutellum is not so much narrowed towards the apex; the median segment is longer and not so strongly reticulated; the depression in the centre of the mesosternum is narrower and less well marked; the petiole is more slender; the abdomen is broader and more pilose; and the second transverse cubital nervure is received nearer the middle of the radial cellule.

139. **Sphærophthalma eubule.**

Ferruginea, longe dense pallide pilosa; abdominis apice nigro-fusco, thorace supra reticulato; alis clare hyalinis, nervis stigmateque flavis. ♂.

Long. 11 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

The head is nearly as wide as the thorax, narrowed and rounded behind, where it is shorter than the length of the eyes; shining, sparsely punctured, covered, but not very thickly, with long soft pale hair; the ocelli brownish and not situated on a black patch; the mandibles broadly black at the apex. The antennæ are, if anything, longer than the head and thorax united; bare, towards the apex covered with a white down; the flagellum at the base darker, the scape lighter and yellower in colour than the rest; the third joint, if anything, shorter than the fourth. The thorax is densely covered with long white soft hair; the mesonotum is coarsely punctured, the punctures almost running into reticulations and nearly obliterating the two longitudinal furrows; the scutellum coarsely and closely punctured. The median segment has an abruptly rounded slope, and is strongly reticulated all over, except a smooth spot in the centre at the base divided by a curved furrow. The pro- and mesopleuræ strongly punctured, except the apex of the latter; the metapleura reticulated, smooth at the base. The abdomen is a little longer than the head and thorax united, ferruginous, but of a darker tint than the thorax, and with the base of the second and other segments more or less blackish. The petiole is longer than broad, a little shorter than the second segment, gradually dilated towards the apex, smooth and impunctate; the second segment is also smooth and impunctate, covered with long pale soft hair; the other segments are covered with long white hair, the hair having a slight fulvous tinge; the apical segment is keeled down the side, rounded at the apex, the surface shagreened. The basal segment on the underside is bluntly keeled down the centre, the apex oblique, the surface bearing somewhat large, distinctly separated, punctures. The second ventral segment bears some not very large, shallow punctures; the other segments are covered with long pale hair, hiding the surface; the apical ventral segment is not so hairy as the others, and is more strongly punctured. The legs are of a paler and more yellowish colour than the thorax or abdomen; they are covered thickly on the tibiæ and tarsi with long pale soft white hair; the spurs are pale; the four hinder femora are darker than the front pair, particularly towards the apex. The wings reach beyond the apex of the abdomen and are clear hyaline throughout; the nervures are pale yellow, the stigma having a darker tint; the radius is curved at the base and apex; the first transverse cubital nervure is curved, the second is straight and slightly oblique, and the third is obliterated completely; the cubital nervure is angled where the first (and only) recurrent nervure is received before the middle of the cellule; the transverse basal nervure is received quite close to the transverse median, being almost interstitial.

This species is smaller than *S. paron*, and has the abdomen longer compared with the head and thorax, with the petiole more gradually dilated; the fourth antennal joint is longer compared with the third; and the mesonotum is reticulated (not punctured), with the parapsidal furrows obsolete.

The following two species have, as in *S. paron*, &c., the third transverse cubita nervure and the second recurrent nervure obliterated entirely. They are small species, with rather pallid legs and antennæ, and with the abdomen banded with black; the femora are more or less infuscated. In *S. aretes* the petiole is much longer than in *S. nigrobalteata*, and it is also more deeply coloured; the petiole and the thorax being also much more strongly sculptured; besides being less thickly haired, the hair itself is shorter.

140. **Sphærophthalma nigrobalteata.**

Long. fere 7 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

The head as wide as the thorax, the vertex indistinctly punctured, rather thickly covered with long white hair; the ocelli in a black patch, the anterior ocellus surrounded by a furrow; behind, the head is rounded and as long there as the eyes; the tips of the mandibles broadly black. The antennæ reach beyond the apex of the thorax; moderately stout, not tapering much, if it all, towards the apex; the scape a little curved, bearing white hair; the flagellum with a microscopic white pile; the third joint distinctly shorter than the fourth, being not much more than twice the length of the second. The thorax closely covered with long white hair. The propleuræ very finely punctured; the mesopleuræ reticulated, except at the extreme base and at the apex; the metapleuræ reticulated at the apex, the rest impunctate, shining, and a little excavated. The mesonotum without furrows, finely rugose. The scutellum more shining than the mesonotum, and much more finely and obscurely punctured. The median segment has a gradually rounded slope to the apex; coarsely reticulated, except in the centre at the base; covered with short white soft hair; at the base there is a broad, somewhat triangular, smooth, shining area, having in the centre two straight keels, and outside these are two straight keels, the distance separating these being less than the distance separating them from the outer keels. The abdomen is not very much longer than the head and thorax united. The petiole is shorter than the second abdominal segment, gradually dilated towards the apex; smooth, impunctate, bearing long white hair; its extreme apex is blackish. The second and following segments are impunctate, smooth, and shining; the second segment is sparsely covered all over with long white hair; the other segments have the hair longer and closer, especially towards the apex, where they are blackish; the terminal segment is impunctate, not depressed in the centre, the apex broadly rounded and pale yellow. The ventral segments are impunctate, sparsely covered with white hair; the second and following segments blackish towards the apex; the terminal segment is triangularly depressed at the apex. The legs are of a paler colour than the body; the femora are more or less infuscated; the tips of the tarsal joints blackish; the hind spurs reach a little beyond the middle of the metatarsus. The wings reach beyond the apex of the abdomen; clear hyaline, the

nervures pallid testaceous, the stigma with a more fulvous tint. The radial cellule is longer than the stigma; the basal abscissa of the radius is short and oblique, the apical abscissa longer and curved; the first transverse cubital nervure is strongly, the second very slightly oblique; the third transverse cubital and the second recurrent nervures are entirely obliterated; the first recurrent nervure is received in the basal third of the cellule.

In having the abdomen belted with black this species resembles *S. aretes*; but that insect has the petiole (and especially the narrowed basal part) longer and towards the apex much more strongly punctured. *S. aretes* also agrees with *S. nigrobalteata* in having the median segment reticulated, but the base in the centre is reticulated like the rest of the segment, there being no keels with the intervening spaces impunctate; the metapleuræ are entirely punctured, and the third antennal joint is much longer in proportion to the fourth.

141. **Sphærophthalma aretes.**

Ferruginea, antennis pedibusque pallide flavis; abdominis segmento 3° nigro balteato; alis hyalinis, apice levissime fumato, nervis pallide flavis, stigmate flavo. ♂.

Long. 7 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

The head is nearly as wide as the thorax, impunctate, sparsely covered with long white hair; the mandibles yellowish, the tips ferruginous; behind the eyes the head is much narrowed and rounded, and is developed there nearly the length of the eyes. The antennæ are a little longer than the head and thorax united, not tapering much, if at all, towards the apex, uniformly pale yellow, clothed with a white microscopic down; the third joint is perceptibly longer than the fourth. The thorax is of a deeper ferruginous tinge than the head, and is sparsely covered with long pale fuscous hair; the mesonotum is indistinctly punctured; the median segment is reticulated and has a gradually rounded slope; the pro- and mesopleuræ are punctured, the metapleuræ reticulated. The petiole is nearly as long as the second abdominal segment and becomes gradually thickened towards the apex; it is keeled laterally, coarsely punctured, and covered with long white hair. The second segment is punctured somewhat strongly; the other segments are impunctate; the third segment has a broad black band in the middle; the apical segment is paler and without keels. The third and fourth ventral segments are for the greater part black. The hinder femora are for the greater part black. The wings nearly reach the apex of the abdomen; the radial cellule is a little shorter than the stigma, and commences a little beyond its base; the radial nervure at the base and apex is straight; at the base the second cubital cellule is not half the width it is at the apex; the first recurrent nervure is received shortly before the first transverse cubital; the second recurrent and the third transverse cubital nervures are completely obliterated.

Apart from the difference in coloration, this species differs from the preceding in the longer petiole, and in having the radial cellule acutely pointed (instead of truncated) at the apex.

The following species (*S. otomita*, *S. laerma*, and *S. severa*) have the abdominal peduncle narrowed at the base, broadened at the apex, the narrowed part forming a distinct "neck." They are also stouter and broader, the thorax especially, except in *S. otomita*. The abdomen is short and broad.

142. **Sphærophthalma otomita.**

Ferruginea, capite nigro, pedibus testaceis, femoribus posterioribus fuscis, antennis testaceis; alis hyalinis, nervis fuscis, stigmate nigro. ♂.

Long. fere 12 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

The head is narrower than the thorax, rounded, but not much narrowed, behind the eyes, almost impunctate, sparsely covered with short pale pubescence: the ocelli large, the posterior two bordered behind and at the sides with a shallow furrow, there being also a sharper furrow in front of the anterior ocellus. The mandibles at the base bear some white hair; their tips are black. The antennæ are longer than the head and thorax united, tapering very slightly towards the apex; the flagellum covered with an obscure white pile; the basal joint short, thick, and with a few white hairs; the third and fourth joints subequal. The mesonotum is impunctate; the parapsidal furrows do not reach the scutellum; on their outer side is a keel which becomes sharper and more distinct towards the scutellum, with which it unites obliquely. The scutellum is impunctate and has a furrow across its base; it becomes narrowed towards the apex and bears a few long white hairs. The median segment has a rather abrupt slope at the apex; it is smooth, glabrous, except for a few white hairs; there are no reticulations, but there is a furrow down the centre. The pro- and mesopleuræ are impunctate and very shining, as are also the metapleuræ, which have an oblique furrow. The abdomen is not much longer than the head and thorax united, and in the middle is almost as wide as the mesothorax. The petiole is nearly as long as the second abdominal segment; it is very shining and almost glabrous; the base is narrow, the apical three-fourths being broad; towards the base of this broad part is a longitudinal furrow, which does not reach the apex. The other dorsal segments are impunctate, shining, glabrous or nearly so; the apical segment is depressed at the sides. On the underside, the petiole is flat, sparsely covered with pale hairs; in the centre is a straight furrow; there is another furrow down the sides, which have a distinct margin or keel on the inner side. The legs are covered with long white hair;

the tarsi have white down. The radial cellule is shorter than the stigma; the radial nervure is oblique at the base and apex, the apical turned-up portion having a short branch; at the top the second cubital cellule is about the length of the space bounded by the first transverse cubital and the first recurrent nervures; the second recurrent nervure is received shortly before the apical third of the cellule; both the recurrent nervures are bent—the first roundly, the second more acutely; the transverse basal nervure is interstitial.

143. Sphærophthalma laerma.

Long. fere 10 millim. ♂.

Hab. Mexico, Northern Sonora (*Morrison*).

Head deep black, the clypeus and mandibles testaceous, the tips of the latter piceous and black; shining, impunctate, the top sparsely covered with long pale, soft hairs, narrowed and rounded behind; the furrow between the hinder ocelli deep and wide; the mandibles covered with long pale fulvous hair. The antennæ reach beyond the apex of the thorax, and taper slightly towards the tip, the apical joints curved; the scape covered with long pale fulvous hair; the flagellum almost glabrous; the third and fourth joints subequal. The thorax shining, almost impunctate, sparsely covered with long pale soft hair; the lateral furrows on the mesonotum indistinct; the scutellum is narrowed towards the apex; the median segment has a gradually rounded slope, shagreened in the centre towards the apex, indistinctly furrowed down the middle at the base, the furrow there margined and with an indistinct narrow keel. The propleuræ are distinctly punctured; the mesopleuræ are distinctly punctured, except at the base and apex, the sternum is smooth and impunctate; the metapleuræ are impunctate, except at the apex, where they are indistinctly punctured. The petiole is distinctly longer than the second abdominal segment, punctured towards the apex, and sparsely covered with long pale hair; the basal third is narrowed beneath, in the middle it is broadly keeled, the sides furrowed. The other dorsal segments shining, impunctate; the terminal one broadly and roundly keeled in the middle at the apex, the sides bearing large, deep, roundish punctures. The ventral segments are more or less black, not punctured, and covered sparsely with long fuscous hair. The legs are not very closely covered with long pale soft hair; the tibiæ and tarsi have a paler more testaceous hue than the femora. The wings do not reach the apex of the abdomen, and are clear hyaline, the nervures fuscous, or fuscous-black at the base; the transverse cubital and the recurrent nervures pale; the radial nervure shorter than the area bounded by the space between the base of the stigma and the radial nervure, the basal abscissa of the radius oblique; the appendicular cellule is distinct, the upper nervure curved and pale in colour; the first transverse cubital nervure is curved at the bottom and is received quite close to the second, which is a little curved, the third being still more curved; the first recurrent nervure is

received close to the basal third of the cellule, the second shortly before the middle; the transverse basal nervure is not interstitial.

144. **Sphærophthalma severa.**

Long. 9 millim. ♂.

Hab. MEXICO, Northern Sonora (*Morrison*).

Very near to *S. laerma*, but with the hair on the head and thorax longer and thicker; the furrows on the median segment much less distinct, almost obsolete; the radial cellule shorter and broader; the apical and basal abscissæ of the cubitus curved, not sharply oblique; the second cubital cellule at the bottom shorter, not being much longer than the space bounded by the second recurrent and the third transverse cubital nervures; and the stigma black, not piceous.

The head is not, or very little, narrower than the mesothorax, shining, sparsely haired; black, behind the eyes with a piceous tinge, impunctate; the ocelli large, raised; the head behind the eyes rounded, being there not half the length of the eyes; a shallow furrow connects the hinder ocelli, and there is an indistinct one in front of the anterior ocellus. The labrum and clypeus are piceous, shining, almost bare; the clypeus in the centre roundly dilated; the space between the antennæ almost bare. The mandibles are deep piceous, the tips black; shining, sparsely covered with white and golden hairs; towards the base, on the outer side, there is an elongated depression. The antennæ are stout, nearly as long as the head, thorax, and basal two segments of the abdomen united, not tapering much towards the apex; the third and fourth joints subequal, the third a little curved; the scape with some moderately long white hair; the flagellum almost bare. The thorax shining, sparsely covered with long white hair; the mesonotum and median segment covered, but not thickly, with long, soft, white hair; the mesonotum impunctate, the lateral furrows narrow but distinct, and commencing not far from the base; the scutellum very shining, not narrowed towards the apex, being of nearly equal width throughout. The median segment short, shining, impunctate, rather thickly covered with soft white hair; at the base in the middle there is an area twice as long as broad, and sharply pointed at the apex, the two keels uniting there; there are no keels outside these. The pleuræ are shining, sparsely covered with long, soft, white hair; the propleuræ almost impunctate; the mesopleuræ have distinctly separated round shallow punctures, but are impunctate at the base and the apex; the metapleuræ are indistinctly punctured at the base and apex only. The petiole is narrowed at the base, at the apex as wide as the base of the second segment, impunctate, sparsely covered with long pale hair; beneath it is flat, impunctate, obscurely shagreened and sparsely covered with pale hair, the centre with a straight furrow, the sides keeled. The other abdominal segments are shining, impunctate, and sparsely covered with long fuscous hair. The legs are of a paler colour than the body,

especially the tibiæ; the femora and tibiæ sparsely covered with long, soft, white hair, the tarsi have the hair thicker, closer, and much shorter; the tips of the tarsal joints are slightly darkened; the calcaria are pale. The wings are clear hyaline; the stigma dark, almost black; the nervures fuscous, the transverse cubital and the recurrent nervures much paler. The radial nervure commences beyond the middle of the stigma, sharply oblique at the base, curved at the apex, and extending to the stigma; the second cubital cellule is much narrowed at the top, being not wider there than the space bounded by the first transverse cubital and the first recurrent nervures; the third cubital cellule is widened at the apex, the recurrent nervure received shortly before the middle; the first transverse cubital nervure is roundly curved at the bottom, the second quite straight and slightly oblique, the third a little bent; the transverse basal nervure is interstitial.

In the form of the petiole this species agrees with *S. laerma*; the latter, however, has the scutellum distinctly narrowed towards the apex, the head more rounded behind, the body not so strongly pilose, and the petiole shorter compared to the second segment.

I have seen males only of the following three species. They have but two cubital cellules and one recurrent nervure, the third transverse cubital and the second recurrent nervures being obliterated entirely. The radial cellule is longer than the stigma. The head, thorax, and petiole are ferruginous, the abdomen black, and the body is covered with long white hair. The petiole is elongate, dilated at the apex.

The three species may be separated as follows:—

1 (2). The sternum armed with two stout slightly curved teeth . . . . . *mariæ*.
2 (1). The sternum without teeth.
3 (4). The greater part of the petiole and legs black . . . . . *lamyrus*.
4 (3). The petiole entirely and the legs for the greater part ferruginous . . *facilis*.

145. **Sphærophthalma mariæ.**

Capite, thorace petioleque ferrugineis; abdomine longe albo-hirto; alis hyalinis, nervis stigmateque fuscis. ♂. Long. 12 millim.

Hab. Mexico, Tres Marias Is. (*Forrer*).

The head is narrower than the thorax, rather sharply and obliquely narrowed behind the eyes; the occiput rounded; shining, impunctate, sparsely covered with long white hair; the ocelli in a black spot, indistinctly surrounded by a furrow. The mandibles rufous, the tips black; the basal part bearing long white hair. The antennæ stout, reaching to the apex of the thorax, black, the scape and second joint ferruginous, the basal joint with long white hair; the flagellum black, covered with an indistinct pale pubescence; the third joint almost twice the length of the fourth. The thorax is

densely covered all over with long white hair; the pro- and mesonotum coarsely punctured; the median segment with a gradually rounded slope, reticulated uniformly, except that the spaces in the middle at the base are longer. The pro- and mesopleuræ are strongly punctured; the metapleuræ reticulated at the apex, the rest smooth and impunctate. The petiole is gradually dilated to the apex, the apex strongly punctured; the other abdominal segments shining, impunctate, covered with long white hair. Beneath, the petiole is bluntly keeled in the middle, the apex oblique, the sides with some large punctures; the other ventral segments impunctate, black, covered with long white hair. The legs are covered with long white hair; the long spur of the calcaria fully three-fourths of the length of the metatarsus. The radial cellule is elongate, narrow; the base of the radius straight, oblique, the apex curved; the recurrent nervure is received shortly before the middle.

S. mariæ may be easily known from the other two species of this section by the two blunt teeth on the mesosternum.

146. **Sphærophthalma lamyrus.**

Ferruginea, longe albo-hirta, apice petioli abdomineque nigris; alis hyalinis, stigmate fusco. ♂.
Long. 10 millim.

Hab. GUATEMALA, Capetillo (*Champion*).

The head very little narrower than the mesothorax, shining, impunctate, covered, but not thickly, with long pale fuscous hairs; the front ocellus with a distinct bordering furrow, a shallow furrow running down from it; behind, the head is rounded and is there a little longer than the length of the eyes. The mandibles bear long white hairs; the tips piceous. The antennæ are a little longer than the thorax, stout, tapering very little towards the apex; the scape a little curved, sparsely covered with pale hairs; the flagellum with an obscure pale down; the third joint slightly longer than the fourth and shorter than the first. The thorax is covered with long, white, soft hairs; the pro- and mesonotum rather strongly punctured, the lateral furrows on the mesonotum distinct, reaching to the scutellum, which is strongly punctured and slightly narrowed towards the apex; the transverse furrow at the base of the scutellum deep. The median segment has a gradually rounded, somewhat abrupt slope, and is strongly reticulated; at its base in the centre is a shining area, broader than long, and with a sharp straight keel down the middle. The pro- and mesopleuræ are strongly punctured; the metapleuræ reticulated, impunctate and depressed at the base. The petiole has the apex punctured, black, and shining, the base being rufous and covered, like the apex, with long white hair; at the apex it is twice the length it is at the base, but not half the width of the second segment at the middle. The second segment is smooth and impunctate, and is sparsely covered with long white hair; the other segments are more thickly covered with similar hair, the hairs, too, being longer; the terminal

segment is rufous towards the apex and is densely covered with long white hair. The underside of the petiole is ferruginous, sparsely covered with long white hair; the centre is keeled, the sides grooved. The second ventral segment is black, very shining, impunctate, sparsely covered with long white hair; the other ventral segments are also black and more closely covered with longer white hair; the apex of the terminal segment is depressed in the middle. The legs are black, covered with long white hair, the tarsal joints piceous towards their apices; the long spur of the calcaria reaches beyond the middle of the metatarsus. The radial cellule is more than twice the length of the stigma; the radius is slightly oblique at the base, rounded at the apex; the radial nervure commences at the middle of the stigma; the first cubital cellule is acutely pointed at the base; the first (and only) recurrent nervure is received very shortly in front of the middle of the cellule.

147. **Sphærophthalma facilis.**

Long. 10 millim. ♂.

Hab. Mexico, Northern Sonora (*Morrison*).

The head slightly narrower than the thorax, rounded behind, developed there nearly the length of the eyes, rather thickly covered with long, pale fuscous, soft hair; shining, almost impunctate; the ocelli in a black patch, the hinder pair surrounded by a furrow; the mandibles at the base bearing long white hair, the tips black. The antennæ are a little longer than the head and thorax united; the basal two joints clear testaceous; the flagellum fuscous, paler and more testaceous in tint on the lower side, covered with a very fine down and hardly tapering towards the apex; the third joint slightly longer than the fourth and shorter than the first, which is a little curved and sparsely covered with fuscous hair. The thorax is densely covered all over with long pale hair; the mesonotum is sparsely, the scutellum more strongly punctured; the lateral furrows on the mesonotum are distinct, moderately wide and deep, and reach to the scutellum, which is not much narrowed towards the apex. The median segment has a gradually rounded slope and has the hair longer than on the mesonotum; it is reticulated; the basal central area is large, narrowed in front, broad and transverse at the apex, and with an indistinct keel inside. The hair on the pleuræ is long and white. The propleuræ rugose; the mesopleuræ impunctate at the base, the remainder coarsely punctured, running into reticulations; the metapleuræ hollowed, smooth, and impunctate at the base, the rest reticulated. The petiole is nearly as long as the second abdominal segment, narrow at the base, gradually dilated to the apex; coarsely punctured, sparsely covered with long white hair. The second and following abdominal segments shining, impunctate, covered with long pale hair; the apices of the segments fringed with depressed glistening white hair; the pygidial area covered with long white hair. The ventral segments covered with long white hair, impunctate, except the petiole,

which is coarsely punctured at the sides. The legs are covered with long white hair; the anterior pair, and all the coxæ and trochanters, testaceous, the middle and hind pairs more or less blackish; the calcaria pale testaceous, reaching a little beyond the middle of the metatarsus. The wings hyaline, except a faint fuscous cloud below the stigma; the nervures pale fuscous, lighter towards the base, the stigma much darker; the radial cellule a little longer than the stigma; the radius originates at the middle of the stigma, its base slightly oblique, the apex curved; the first transverse cubital nervure is curved and oblique, bullated on the lower part; the second transverse cubital nervure is also curved, but is not so oblique, and is bullated at the top and bottom; the first (and only) recurrent nervure is received a little beyond the basal third of the cellule; the transverse basal nervure is not quite interstitial.

Allied to *S. lamyrus*, from which it may be known by the petiole being shorter and broader towards the apex; the radial cellule shorter and broader; and the keels of the reticulations on the median segment much weaker. It differs also from the other two species of the group in having the wings spotted.

In the male genital organ the "volsella" reaches near to the apex of the branch of the forceps, which is acutely pointed and quite bare of pubescence; the volsella is broad and bears long hairs on the inner side, the latter rough along the edge. In the male genital organ of *S. lamyrus*, the volsella does not reach to the middle of the branch of the forceps.

The following species may represent the male of the genus *Chyphotes*, Blake, the female of which (the only sex known to Blake) is apterous and has a long petiole, narrow at the base and dilated at the apex, where it is almost confluent with the second segment. The typical *Chyphotes* has the prothorax distinctly narrowed from the mesothorax. The Mexican species has the narrowed basal part of the petiole as long as the dilated apical part, the two together being distinctly longer than the second abdominal segment. In our insect the prothorax is rounded at the sides, the apex being confluent with the mesothorax at its apex and as wide as it; the mesonotum is without the parapsidal furrows; the median segment is distinctly separated from the mesothorax, and is not much shorter than it; the middle tibiæ have two spurs (as in the typical species of *Chyphotes*); the eyes are large, and nearly as long as the part of the head behind them; the antennæ are longer than the head and thorax united, and not much narrowed towards the apex; the ocelli are moderately large; the wings are short, not reaching to the apex of the abdomen; the stigma is much longer than usual in *Sphærophthalma*, and is as long as the radial cellule, which ends very shortly beyond its apex and commences shortly in front of its base; there are only two transverse cubital nervures, the second being distinctly curved; the second recurrent nervure is received near the middle of the cellule, the first close to the base.

In general appearance *S. frugala* resembles the species of the petiolated section of the *Photopsis*-group of *Sphærophthalma*, the coloration and general appearance being very similar; the petiole, however, is much wider towards the apex, the dilated apical part, too, being more distinctly separated from the basal part. The radial cellule is shorter compared to the stigma than in the typical species of *Photopsis*; the radial nervure, too, in the latter extends much further beyond the apex of the cellule, usually much more than the length of the stigma, while here it is received quite close to it. I can see no trace of the third transverse cubital nervure in either of the specimens I have examined; so that if it is permanently absent our form differs both from *Photopsis* and from the typical *Sphærophthalma* in the second cubital cellule receiving both the recurrent nervures. It cannot be referred to *Brachycistis* owing to the two spurs on the middle tibiæ.

148. **Sphærophthalma frugala.**

Ferruginea, longe albo-hirta, pedibus pallide testaceis, femoribus posterioribus ex parte nigris; alis clare hyalinis, apice fusco-maculato. ♂.

Long. 15 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

The head is almost as wide as the mesothorax, sparsely covered with long fuscous soft hair, rather strongly punctured, but with all the punctures clearly separated from each other; rounded and narrowed behind the eyes, the occiput not being transverse; the mandibles have the tips black, the space enclosed by the ocelli being also black. The antennæ are a little longer than the head and thorax united, moderately stout, not attenuated towards the apex, the base pallid testaceous; the third joint distinctly longer than the fourth. The thorax is punctured all over, the prothorax having the punctures smaller and closer together; the mesonotal furrows are wide and deep; the metathorax is elongated, has a gradually rounded slope, and is rather strongly reticulated all over. The pro- and mesopleuræ are punctured, except the hinder edge of the former, which is smooth and shining. The entire thorax is covered with long pale fuscous hair. The abdomen is longer than the head and thorax united. The petiole is longer than the second segment; closely and coarsely punctured all over and covered with long pale fuscous hair; the dilated apical portion is somewhat longer than the narrowed basal part; beneath it is covered with long pale fuscous hair, and the punctuation is slightly stronger than it is above, the remaining segments are covered with long pale hair; the second segment is shagreened, almost punctured; the other segments are more shining and impunctate. The ventral segments, except the second, which is punctured, are smooth and shining. The legs are covered with long white soft hair, except towards the apices of the tarsi, where the hair is shorter, sparser, and darker; the anterior femora bear no black; the four hinder femora have

more than the apical half black. The wings do not reach much beyond the apex of the third abdominal segment; all the nervures, with the stigma, are pallid yellow; the smoky cloud commences beyond the apex of the radial cellule, and extends to the extreme apex of the wing, it being separated from the radial cellule by a clear hyaline band; the second recurrent nervure is received shortly before the middle of the cellule in one of our examples, but not in another. Both the recurrent nervures are quite distinct, but there is no trace of the third transverse cubital nervure. The transverse basal nervure is completely interstitial.

The colour of the body is variable, the hair also varying in being whiter in some examples than in others; the apical cloud on the fore wings may also be darker and larger; and the third abdominal segment may be for the greater part black.

S. (*Photopsis*) *orizaba*, Blake, agrees with the present species in having a cloud in the wings, but among other points it may be separated by the median segment having "three short, longitudinal carinæ not extending to the middle"; and the ventral segments are described as "polished," instead of being strongly punctured as in our species. In *S. frugala*, apart from the reticulations, there are no keels on the median segment.

BRACHYCISTIS.

Brachycistis, Fox, Proc. Calif. Acad. Sci. (2) iv. p. 7 (1894).
Photopsis, Blake, Trans. Am. Ent. Soc. xiii. p. 257 (part.).

In general appearance the species of this genus resemble closely the *Photopsis*-section of *Sphærophthalma*, with which they were at first united by Blake. From these they may be known by the middle tibiæ having only one spur. The second cubital is narrowed at the top; in his generic definition, Fox (*loc. cit.*) describes it as usually "triangular and sometimes petiolate." In all the Central-American specimens I have examined the second cubital cellule is certainly much narrowed at the top, on account of the transverse cubital nervures converging there, but they do not meet, and in none of them is it petiolate. The abdomen may have the petiole longer or shorter compared to the second abdominal segment, and may be distinctly petiolated at the base; it may be shorter than, or equal in length to, the second segment. The appendicular cellule at the end of the radial is seldom complete, its nervure in none of the specimens I have seen reaching to the costa. The recurrent nervures are received by the second and third cubital cellules, and one or other of them may show a tendency to become interstitial with the transverse cubital nervures. There may be three or only two cubital cellules. The species do not exhibit much sculpture; some of them have the hair on the body long and thick, but still not thick enough to hide the colour or sculpture. They are very uniform in coloration, being brownish, with black heads.

So far, we only know the males. The species are nocturnal in their habits, and, according to Cockerell (Ent. News, 1885, p. 64), they come to light at night.

1. **Brachycistis tysias.**

Long. 14 millim. ♂.

Hab. Mexico, Northern Sonora (*Morrison*).

The head as wide as the thorax, almost impunctate, in some specimens with a few long pale hairs, rounded at the sides posteriorly, the space behind the eyes not half their length; deep black, shining, the face between and below the antennæ ferruginous; the mandibles ferruginous, the tips black; the clypeus is dilated in the middle; behind the ocelli is a deep transverse furrow; the eyes are margined behind. The antennæ reach slightly beyond the thorax; they taper towards the apex; the scape has long white hair; the flagellum is glabrous; the third and fourth joints are subequal. The pro- and mesonotum have longish soft pale hairs; shining and sparsely punctured; the lateral furrows on the mesonotum do not extend to the base; the scutellum has a few punctures on the sides. The median segment is shining, slightly shagreened; the apex somewhat oblique and covered with soft white hair, the basal half being almost glabrous; at the base in the middle are two short furrows, which unite at the apex and run into a furrow which proceeds down the centre to near the apex of the segment. The propleuræ are punctured, except round the sides at the base and apex; the mesopleuræ are still more strongly and closely punctured, except at the apex, which bears hardly any punctures; the metapleuræ are slightly hollowed, smooth, and impunctate, except at the apex. The petiole is as long as the second segment, shining, covered with long white hair; the basal third narrowed, the remaining part gradually thickened towards the apex and almost impunctate; beneath it is coarsely shagreened, the sides and the centre furrowed. The other abdominal segments are smooth and shining, bearing long white hair, the hair becoming longer and closer towards the apex. The apical ventral segments are more or less blackish. The legs are of a nearly uniform rufous colour, except that the tibiæ and tarsi may be a little paler in tint; they bear long white hair. The wings hardly reach to the apex of the abdomen, clear hyaline, except that beyond the radial cellule, along the costa, there is a faint narrow cloud; the stigma and the basal and radial nervures are black, the other nervures paler; the base of the costa is white. The radial cellule is shorter than the stigma; the basal abscissa of the radius curved, the apical abscissa straight and with a short branch at its base; the transverse cubital nervures are pale and bullated, the first and second nearly uniting at the top, the space bounded by them being less than the space bounded by the first transverse cubital and the first recurrent nervures; the first recurrent nervure is received in the basal third of the cellule, the second near the middle; the transverse basal nervure is interstitial; the recurrent nervures are curved, the second very pale.

2. **Brachycistis dubitatus.**

Long. 13 millim. ♂.

Hab. MEXICO, Northern Sonora (*Morrison*).

The head is nearly as wide as the mesothorax, shining, impunctate, deep black, the clypeus obscure testaceous, the mandibles piceous, black at the apex; covered with white hair; rounded behind, and developed there about one-third of the length of the eyes; on the outside the ocelli are surrounded by a furrow, and there is a shallow indistinct furrow joining the hinder pair behind. The antennæ reach beyond the apex of the thorax; the scape with some white hairs; the flagellum almost bare, tapering a little towards the apex; the third and fourth joints subequal. The thorax is shining, impunctate, sparsely covered with long soft white hair, the hair on the scutellum longer than on the other parts; the lateral furrows on the mesonotum narrow, but distinct; the scutellum very slightly narrowed towards the apex. The median segment has a gradually rounded slope, shining, impunctate; the basal area long, not very distinctly traced, the apex reaching nearly to the middle of the segment. The pro- and mesopleuræ shining, punctured, but not strongly, the base and apex impunctate; the metapleuræ impunctate, except at the extreme apex. The petiole is slightly longer than the second segment, gradually dilated to beyond the middle, shining, impunctate, covered with long, soft, white hair; the other segments are impunctate, sparsely covered (especially towards the apex) with long white hair; the apical segment is broadly raised in the centre, the sides with large rounded or oval punctures. The bottom of the petiole is bluntly keeled in the centre, covered with some large punctures; the edges furrowed. The other ventral segments shining, impunctate, sparsely covered with long pale hairs. The legs are sparsely covered with long white hair, the hair being much shorter and closer on the tarsi; the spurs do not reach to the middle of the metatarsus. The wings are shorter than the body, reaching nearly to the apex of the fourth abdominal segment, clear hyaline; the stigma black; the nervures blackish at the base of the wings, much paler towards the apex; the radial cellule wide, shorter than the stigma; the basal abscissa of the radius oblique, issuing a little beyond the middle of the stigma, the apical abscissa straight and paler in colour; the transverse basal nervure interstitial; at the top, the first and second transverse cubital nervures almost unite; the first recurrent nervure received near the basal third of the cellule, the second near the middle.

3. **Brachycistis vigilax.**

Long. fere 12 millim. ♂.

Hab. MEXICO, Northern Sonora (*Morrison*).

The head black, the apex of the clypeus and the mandibles piceous, the latter

black at the tip; shining, sparsely covered with long soft fuscous hair, the mandibles at the base bearing long pale fulvous hair; rounded at the sides behind, and there not one-fourth of the length of the eyes. The ocellar region not much raised; a deep furrow surrounding the anterior ocellus; the posterior ocelli united by a shallow indistinct furrow. The antennæ reaching beyond the apex of the petiole, not tapering much towards the apex; the flagellum almost bare; the scape with fuscous hair; the third and fourth joints subequal. The pro- and mesothorax rather densely covered with long pale hair, shining, almost impunctate; the propleuræ rough in front, smooth behind; the greater part of the hinder metapleuræ impunctate. The lateral furrows on the mesonotum are distinct and reach nearly to the base, but are clearly separated from it. The scutellum is smooth and shining, almost without punctures, hardly narrowed behind, and bearing long fuscous hair. The median segment has at the apex a rather abrupt slope; shining, impunctate; the base almost glabrous, the rest sparsely covered with long fuscous hair; at the base, in the centre, there is an indistinct narrow depression pointed at the apex. The petiole is as long as the second segment, narrowed at the base, gradually dilated towards the apex; sparsely covered with long soft fuscous hair; almost impunctate; in the middle there is a shallow indistinct furrow. The other dorsal segments are smooth and shining, covered, especially at the sides, with long, soft, pale fulvous hair; at the apex the terminal segment has a broad rounded keel in the middle, the sides being depressed. The basal ventral segment is flat; a deep furrow down the centre; the edges are also furrowed on the inner side, the outer edge being sharply keeled. The other ventral segments are, for the greater part, blackish, smooth, sparsely covered with long soft fuscous hair. The legs are sparsely covered with white hair; the femora are darker and more rufous in tint than the tibiæ; the tarsi are without black. The wings reach nearly to the apex of the abdomen; clear hyaline, the stigma fuscous, darker at the apex. The radial cellule is shorter than the stigma, the transverse radial issuing from beyond its middle; it is wide and rounded at the apex and from the radius issues at its bottom a short branch. The second cubital cellule is narrow, triangular, and oblique; the third is wide and much longer than it—at the apex it is wider than it is at the base. The first recurrent nervure is received in the basal third of the cellule; the second is received shortly before the middle of the cellule; the cubitus is obsolete beyond the second transverse cubital nervure; the transverse basal nervure is interstitial; the first transverse cubital nervure is straight.

Allied to *B. fulvilabris*, but a little stouter and more pilose; the antennæ are darker and more slender; the area at the base of the median segment is distinctly developed, and the apex of the segment has a much more abrupt slope; the third cubital cellule is longer compared to the second; the radius at the second cubital cellule is oblique and quite straight, not curved as in *B. fulvilabris*.

4. Brachycistis fulvilabris.

Long. 11 millim. ♂.

Hab. MEXICO, Northern Sonora (*Morrison*).

The head is as wide as the thorax, shining, impunctate, rounded behind and there not half the length of the eyes; the front and vertex with some long pale soft hairs. The front is raised where the large piceous ocelli are placed; there is a distinct furrow surrounding the anterior ocellus, and the hinder pair of ocelli are connected by a narrow straight furrow. The mandibles are rufo-testaceous, the tips black. The clypeus is dull ferruginous. The antennæ reach to the middle of the abdomen; they taper slightly towards the apex; the scape has a few long pale hairs; the flagellum is almost glabrous; the third joint is a very little longer than the fourth, and as long as the basal two joints united. The thorax bears long, soft, white hair; the base of the median segment is almost glabrous, the other part having the hair longer than on the mesonotum. The mesonotum has a few indistinct punctures; the scutellum has the punctures larger and much more distinct; the punctures on the apex of the median segment are indistinct, giving the surface merely a roughened appearance. The pleuræ are shining; the propleuræ are a little hollowed and impunctate; the mesopleuræ are indistinctly punctured, the punctures wide apart; the apex only of the metapleuræ is punctured, the punctures, however, not being very distinct. The median segment has a gradually rounded slope. The abdomen is longer than the head and thorax united, shining, impunctate. The petiole is longer than the second segment, narrowed at the base, gradually dilated towards the apex; beneath, it is flat; the surface rough, and covered with long white hair; the sides furrowed and depressed at the edges. The dorsal segments are shining, sparsely haired, the hairs becoming thicker together and longer on the apical segments. The ventral segments are shining, more or less fuscous in colour, sparsely covered with long pale hair, which has a slight fulvous tinge. The legs are covered with long, pale, soft hair; the anterior legs are paler, wanting the fulvous tinge, except on the coxæ, the tibiæ being especially pale; the hind tarsi are slightly darkened towards the apices of the joints. The wings are clear hyaline; the stigma is dark fuscous, paler towards the apex. The transverse radial nervure originates beyond the middle of the stigma, and is united to the second transverse cubital. The second cubital cellule is not triangular at the base, the upper nervure being rounded at its base, thus making the base of the cellule rounded, not acute; the first recurrent nervure is received quite close to the base of the cellule, almost joining it; the second recurrent nervure is received very shortly before the middle of the cellule; the cubital nervure ends at the third transverse cubital nervure. The radial nervure terminates in a short branch after it turns up to the costa.

5. **Brachycistis sciron.**

Long. fere 14 millim. ♂.

Hab. Mexico, Northern Sonora (*Morrison*).

The head black, the mouth and mandibles piceous, their apices blackish; shining, impunctate, sparsely covered with long, pale, fuscous hair; behind the eyes the head is rounded and not half their length there; the ocelli not much raised, surrounded by a depression, a straight indistinct furrow uniting the posterior pair. The antennæ reach to near the middle of the second abdominal segment; the scape has a few white hairs; the flagellum is almost glabrous; the third joint is longer than the basal two joints united; the third and fourth joints are subequal. The thorax is sparsely covered with long white hair; the pronotum is closely punctured; the mesonotum is blackish in front in the centre, and is shining and impunctate. The scutellum is very shining, impunctate, covered with long white hair; the furrow at its base is wide and deep. The median segment is covered with long white hair; the apex has a rather abrupt slope, rounded at the top; the base is shagreened; in the centre at the base are two narrow keels, converging towards the apex, and outside these is an indistinct keel. The pleuræ are covered with long, soft, white hair. The pro- and mesopleuræ are somewhat strongly punctured to near the apex, except the latter behind. The sternum is impunctate. The metapleuræ are impunctate, except at the apex; there is an oblique not very distinct depression at the base, narrowed towards the apex, and reaching a little beyond the middle of the segment. The abdomen is distinctly longer than the head and thorax united, shining, impunctate, covered with long, soft, plae yellowish hair. The petiole is longer than the second segment, much narrowed at the base, gradually dilated towards the apex; beneath, it is shagreened, the sides with a few punctures, and down the centre towards the apex are two indistinct keels. The other dorsal segments are shining and impunctate; covered, but not thickly, and especially towards the apices, with long pale hair. The apical half of the terminal segment is somewhat coarsely punctured, margined, and slightly depressed. The legs are coloured like the thorax, except that the anterior pair are paler and more yellowish in tint; covered with long white hair; the apices of the hinder tarsal joints fuscous. The wings reach near to the apex of the abdomen, clear hyaline; the stigma deep black, paler at the extreme apex; the nervures fuscous, paler towards the apex. The radial cellule is wide, shorter than the stigma, originating a little beyond the middle of it; the basal and apical abscissæ oblique. The first transverse cubital nervure is curved towards the base, the third towards the top; the first recurrent nervure is received at the base a little more than the length of the second cubital cellule at the top; the second recurrent nervure is received very shortly beyond the middle of the cellule. The cubital nervure does not extend beyond the apex of the third cubital cellule.

B. tysias approaches this species; but it is larger, and has the antennæ shorter and stouter, and the body more pilose; the petiole is longer and much more deeply furrowed down the centre, especially towards the middle; the furrow behind the ocelli is wider and deeper; the furrows on the mesonotum are deeper; the area on the base of the median segment is shorter; the basal narrowed part of the petiole is longer, and it has a distinct longitudinal furrow, which extends near to the apex, the apical half is much more strongly punctured, and the hair is longer and thicker; the mesopleuræ are much more strongly punctured, the metapleuræ more deeply and widely excavated.

6. **Brachycistis arines.**

Ferrugineus, capite nigro, abdominis apice fusco, antennis testaceis; pedibus pallide testaceis, femoribus posticis fuscis; alis hyalinis, nervis pallidis, stigmate fusco. ♂.

Long. 10 millim.

Hab. MEXICO, Northern Sonora (*Morrison*).

The head is somewhat narrower than the mesothorax, black, shining, very sparsely haired; abruptly narrowed behind the eyes; the anterior ocellus with a semicircular furrow in front, and from this furrow runs a short sharp keel; the clypeus and mandibles are ferruginous, the tips of the latter black. The antennæ are longer than the head, thorax, and petiole united, very little attenuated towards the apex; the third joint hardly longer than the fourth; the apical joints slightly dilated on the underside. The thorax is sparsely covered with short white hair; smooth, impunctate; the parapsidal furrows reaching near to the base of the mesonotum; the scutellum smooth, impunctate, glabrous, the furrow at its base deep. The median segment has a gradually rounded slope, impunctate, with carinæ or reticulations. The pro- and mesopleuræ are impunctate, sparsely covered with soft white hair; the base of the metapleuræ is smooth, shining, and impunctate, its apex closely punctured. The petiole is somewhat longer than the second segment and is gradually dilated towards the apex; it bears long fuscous hair and is obscurely punctured at the apex; its lateral keel is distinct. The other dorsal segments are impunctate, shining, for the greater part black, and are sparsely covered with long white hair. The legs are testaceous, covered with long white hair, the femora more or less fuscous. The wings reach beyond the apex of the abdomen; the radial cellule is shorter than the stigma; the basal abscissa of the radius is oblique, the apical abscissa curved and emitting a short branch; the second cubital cellule is much narrowed at the top, the first and second transverse cubital nervures converging there; the first recurrent nervure is received in the basal third of the cellule, the second almost in the middle of the cellule; the transverse basal nervure is interstitial.

7. Brachycistis exornatus.

Ferrugineus, longe albo-hirtus, antennis pedibusque pallide flavis; alis hyalinis, nervis pallide flavis, stigmate fusco. ♂.

Long. 7 millim.

Hab. Mexico, Northern Sonora (*Morrison*).

The head is not much, but still distinctly, narrower than the mesothorax, narrowed and rounded behind the eyes; smooth, shining, impunctate, somewhat sparsely covered with long white hair; the ocelli in a black patch, a deep curved furrow immediately in front of them; the oral region and mandibles paler, the tips of the latter black. The mesonotum impunctate, covered with long pale hair, the parapsidal furrows commencing shortly behind its centre. The scutellum coarsely punctured, and with two keels down it outside the centre. The median segment has a gradually rounded slope; it is strongly reticulated, except in the centre, the centre being smooth and marked with three straight keels which reach near to the middle of the segment. The propleuræ are reticulated; the mesopleuræ are coarsely reticulated, the reticulations running into punctures; the metapleuræ are reticulated like the mesonotum, but with the reticulations, if anything, larger, the base smooth and shining and a little excavated. The abdomen is not much longer than the head and thorax united, and covered with long fuscous hair. The petiole is not much shorter than the second segment, narrowed towards the base, the apex punctured. The other segments have no punctures, and are covered with long pale hairs; the terminal segment is of a paler yellow tint and without punctures. The ventral segments are covered with long white hair. The legs are covered with long white hair, and are of an almost unicolorous pale yellow. The radial cellule is distinctly longer than the stigma, its apex acutely pointed; the second cubital cellule is narrowed at the top, being there not much broader than the space bounded by the first transverse cubital and the first recurrent nervures; the third transverse cubital and the second recurrent nervures are obliterated; the transverse basal nervure is interstitial.

SUPPLEMENT.

THE following species of Sphegidæ, Bembicidæ, Pompilidæ, and Mutillidæ have been described by me since the publication of the preceding pages.

PODIUM (p. 26).

6. **Podium crassipes.**

Podium crassipes, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 368 (1897) [1].

Hab. MEXICO, Omealca, near Orizaba (*M. Trujillo* [1]).

SPHEX (p. 29).

17. **Sphex (Priononyx) laerma.**

Sphex (Priononyx) laerma, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 370 (1897) [1].

Hab. MEXICO, R. Papagaio in Guerrero 1200 feet (*H. H. Smith* [1]).

BEMBIDULA (p. 95).

7. **Bembidula affinis.**

Bembidula affinis, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 371 (1897) [1].

Hab. MEXICO, Dos Arroyos in Guerrero (*H. H. Smith* [1]).

PSEUDAGENIA (p. 161).

29. **Pseudagenia tarsalis.**

Pseudagenia tarsalis, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 372 (1897) [1].

Hab. GUATEMALA, Purula in Vera Paz (*Champion* [1]).

SALIUS (p. 173).

6 (A). **Salius incomptus.**

Salius incomptus, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 372 (1897) [1].

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith* [1]).

19 (A). **Salius imitatrix.**

Salius imitatrix, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 373 (1897) [1].

Hab. MEXICO, Cuernavaca in Morelos (*H. H. Smith* [1]).

POMPILUS (p. 185).

65. **Pompilus ceres.**

Pompilus ceres, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 374 (1897) [1].

Hab. PANAMA (*Boucard* [1]).

66. **Pompilus rinconensis.**

Pompilus rinconensis, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 375 (1897) [1].

Hab. MEXICO, Rincon and Iguala in Guerrero (*H. H. Smith* [1]).

67. **Pompilus idris.**

Pompilus idris, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 375 (1897) [1].

Hab. MEXICO, Atoyac in Vera Cruz (*H. H. Smith* [1]).

SPHÆROPHTHALMA (p. 313).

149. **Sphærophthalma posticata.**

Sphærophthalma posticata, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 376 (1897) [1].

Hab. MEXICO, Chilpancingo in Guerrero (*Höge* [1]).

150. **Sphærophthalma latebalteata.**

Sphærophthalma latebalteata, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 377 (1897) [1].

Hab. MEXICO, Cordova and Jalapa (*Höge* [1]).

151. **Sphærophthalma chiron.**

Sphærophthalma chiron, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 378 (1897) [1].

Hab. MEXICO, Venta de Zopilote (*H. H. Smith* [1]), Acapulco (*Höge* [1]).

152. **Sphærophthalma myrmiciformis.**

Sphærophthalma myrmiciformis, Camer. Ann. & Mag. Nat. Hist. (6) xix. p. 378 (1897) [1].

Hab. PANAMA, Bugaba (*Champion* [1]).

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[Names in small capitals refer to Families, &c.; those in roman type to the chief reference to each species included in the work; those in italics to species incidentally mentioned, synonyms, &c.]

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BIOLOGIA CENTRALI-AMERICANA.

Edited by F. D. GODMAN and OSBERT SALVIN.

THE issue (in Parts) of a series of Quarto Volumes upon the Fauna and Flora of Mexico and Central America under this title was commenced in September 1879, and has been continued to the present time. The area examined includes the whole of Mexico from the United States boundary (but omitting the peninsula of Lower California), British Honduras, the five Central-American Republics of Guatemala, Honduras, Salvador, Nicaragua, and Costa Rica, and the Colombian State of Panama as far south as the Isthmus of Darien.

The materials for this work have been gradually accumulated since the end of the year 1857; but during the past nine years, since the publication was commenced, the accessions in all branches of Zoology have been very great, so that the extent of the work has been largely increased. To give an idea concisely of what has been already done in the Insecta alone: the number of species of various orders examined and catalogued nearly reaches 15,000; of these upwards of 7500 have been described in this work for the first time, and a very large number of them have been figured.

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When this work was first planned, it was not intended to touch the wide field of investigation offered by a study of the Indian races of the area described above, or of their works. The subject was known to be too vast to be attempted in any general way. The recent work of

Mr. A. P. Maudslay upon the chief Indian remains of Guatemala, however, affords an opportunity of adding a comparatively limited, but very important, contribution to our knowledge of the Archæology of Central America, which it has been thought desirable to add to this work. Mr. Maudslay's labours on the ruins at Quirigua, Copan, and other places have brought to light much that was previously unknown, and his careful work in making moulds in paper and plaster, and his beautiful photographs and plans render it possible to produce drawings and illustrations far exceeding in accuracy anything that has hitherto been attempted. The importance of this work can readily be appreciated when it is known that these monuments are being rapidly destroyed.

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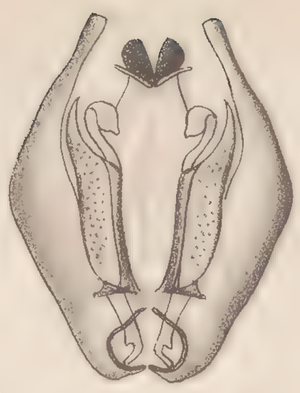
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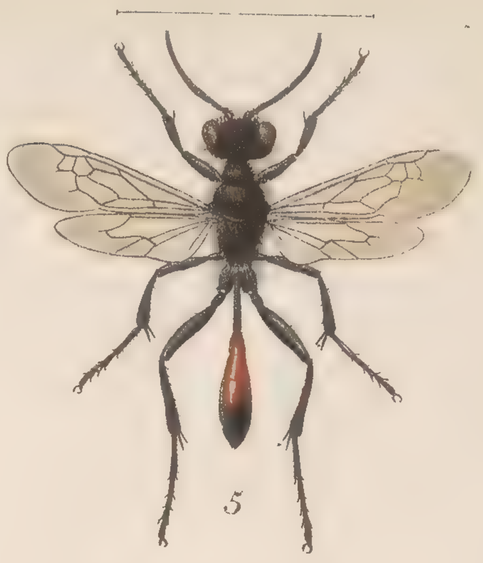
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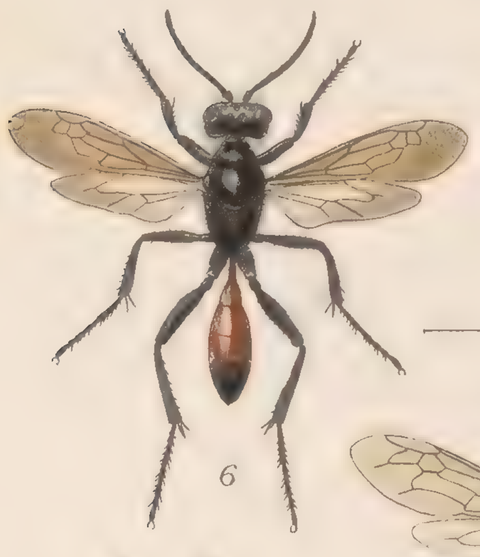
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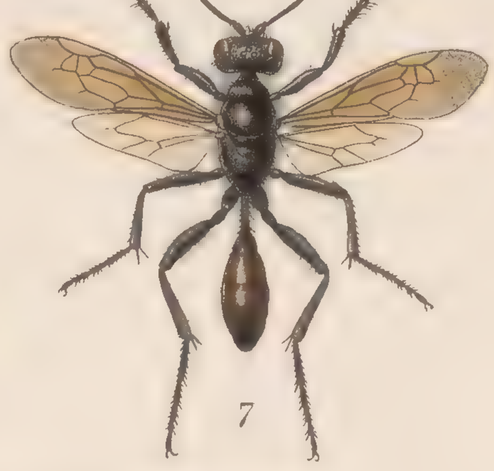
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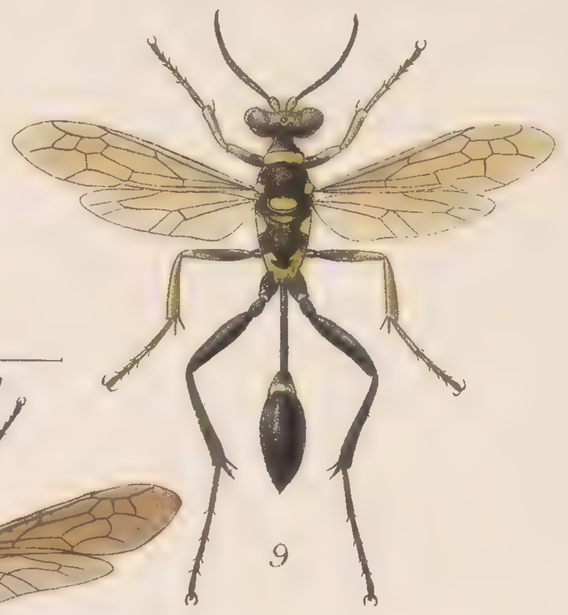
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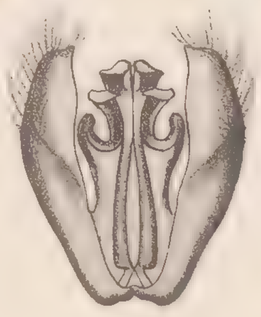
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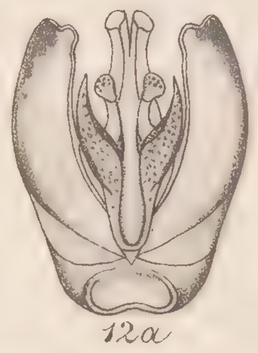
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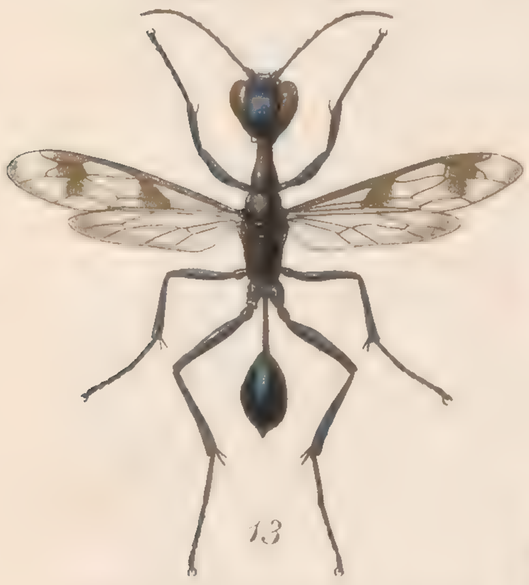
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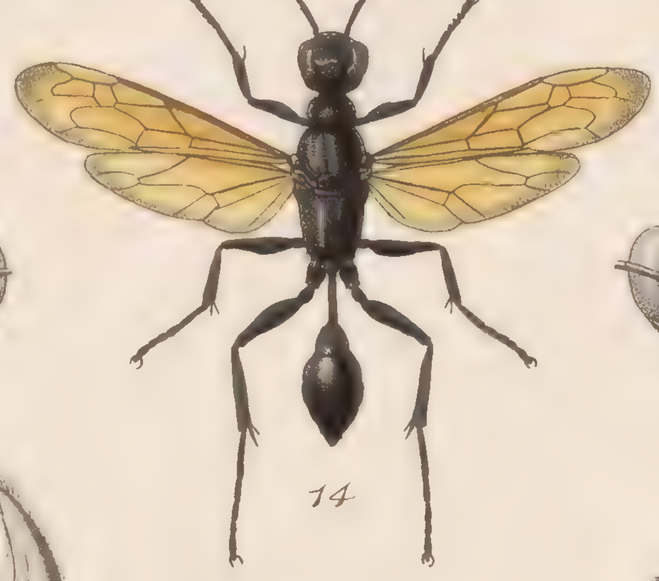
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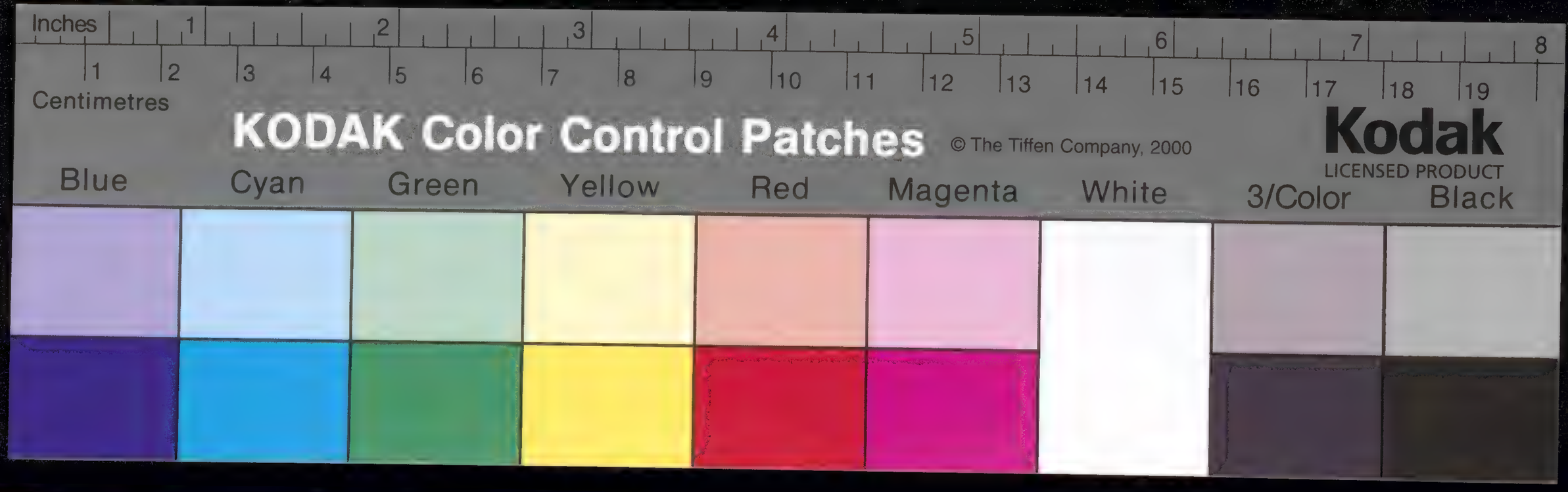

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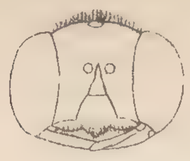
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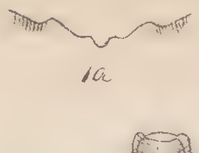

1a

1b

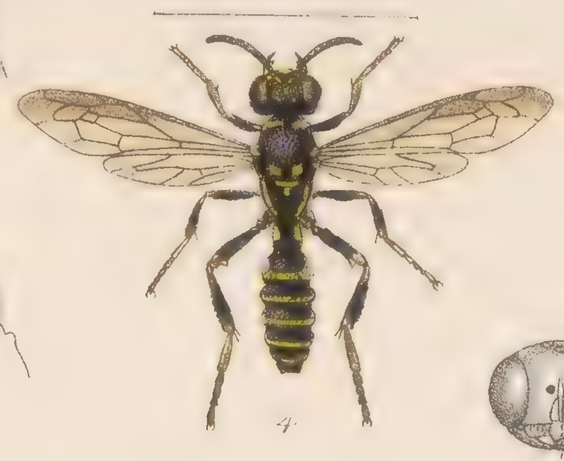
1c

4a

2b

2c

1b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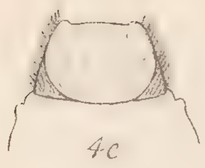
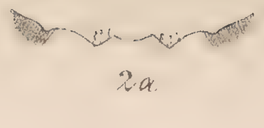
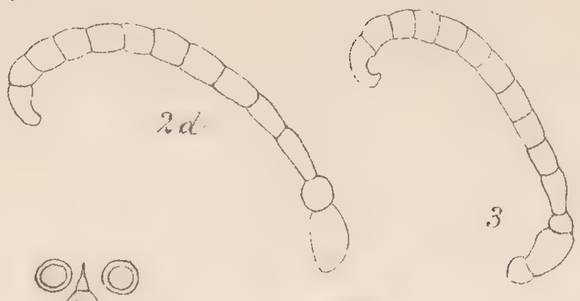

4c

2


2a


2d 3

6

6a

6b 6c

5

5a

5b

4d

5c

7

7a

7b

8

7c

8a

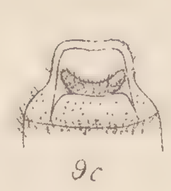
8b

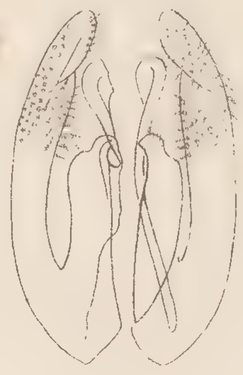
9

3a

9b

9a


9c


10

11

12a

12

12b

13

14

15

16

17

18

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21

22

23

1, 1*a-c* ♂ CERCERIS ESAU.
2, 2*a-d* „ ACOLHUA.
3, 3*a* ♂ „ CURVICORNIS.
4 ♂, 4*a-d* „ HEBES.
5, 5*a-c* „ AZTECA.
6 ♂, 6*a-c* ♀ „ TEPANECA.
7, 7*a-c* ♀ „ ERYTHROPODA.
8, 8*a*; *b* ♀ „ BICORNUTA.
9, 9*a-c* CERCERIS PILOSA.
10 ♂ „ SONORENSIS.
11 ♂ PHILANTHUS VERTILABRIS.
12 ♀ 12*a*, *b* „ XANTHOSTIGMA.
13 ♂ „ MACULIFRONS.
14 „ MULTIMACULATUS.
15 ♀ MIMESA MEXICANA.
16 ♀ MIMESA PULCHRA.
17 ♀ „ STRIOLATA.
18 ♀ „ LONGIVENTRIS.
19 ♀ „ MONTICOLA.
20 ♀ „ CLAVIVENTRIS.
21 ♀ PSEN ANNULIPES.
22 ♀ STIGMUS PODAGRICUS.
23 ♀ „ MONTIVAGUS.

W. Purkiss lith.

Hanhart imp.
564.

KODAK Color Control Patches © The Tiffen Company, 2000
Kodak LICENSED PRODUCT
Blue Cyan Green Yellow Red Magenta White 3/Color Black
Inches 1 2 3 4 5 6 7 8
Centimeters 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Inches 1 2 3 4 5 6 7 8
Centimetres 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
KODAK Color Control Patches © The Tiffen Company, 2000
Kodak LICENSED PRODUCT
Blue Cyan Green Yellow Red Magenta White 3/Color Black

1♀ CRABRO SAXATILIS.
2♀ " CHAMPIONI.
3♀ " ATTILANÆ.
4♀ " SONORENSIS.
5♀, 5*a*,*b*,♂ " MONTIVAGUS.
6♀, 6*a*,*b*,♂ " CENTRALIS.
7♀, 7*a*,*b*,♂ " ARIEL.
8♀ " HECTOR.

9♀ CRABRO COSTARICENSIS.
10♀, 10*a*,*b*,♂ " CONSTANCEÆ.
11♀ " GUERRERENSIS.
12♀ " YUCATANENSIS.
13♀, 13*a*,♂ " MONTEZUMA.
14♂ " ALPESTRIS.
15, 15*a*,♂ " ALTICOLA.

16♀, 16*a*–*d*,♂ CRABRO FELTISTA.
17♀ " FULVOHIRTUS.
18♀ " MACULIFARSIS.
19♂ " JASON.
20, 20*a*,*b*,♀ OXYBELUS BUGABENSIS, *var.*
21 " LONGISPINA.
22, 22*a* " AZTECUS.
23, 23*a* " ARGENTEOPILOSUS.

W. Purkiss lith. Hanhart imp. 568.

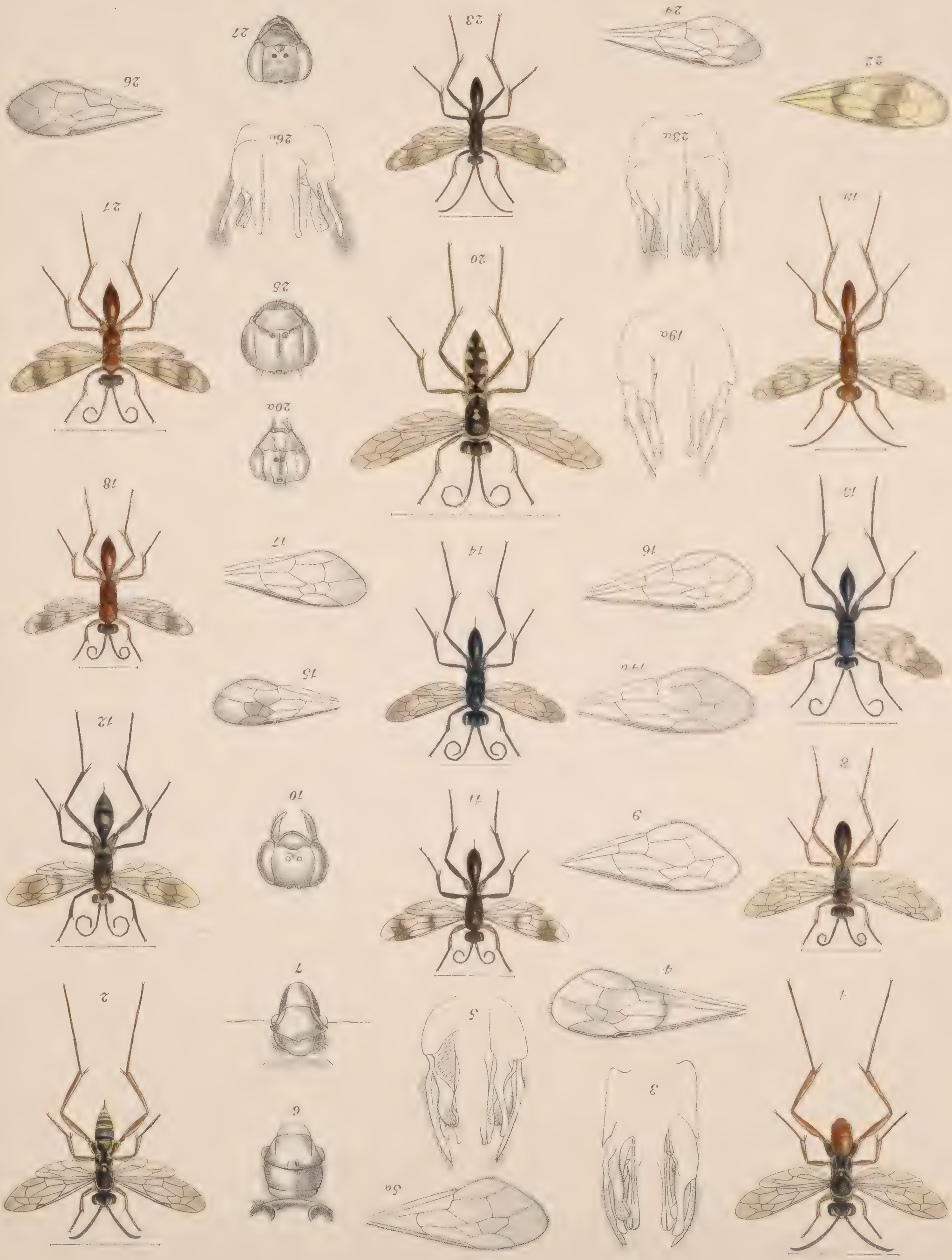
Biol. Centr.-Am. *Hymenoptera. Pl. II. Tab. 9.*

Inches 1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
Centimetres
KODAK Color Control Patches © The Tiffen Company, 2000
Kodak
LICENSED PRODUCT
Blue Cyan Green Yellow Red Magenta White 3/Color Black

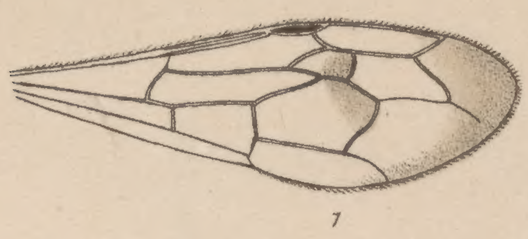
W.Purkiss lith.

1♀ CEROPALES AGILIS. " AZTECA. 3♂ " FUMIPENNIS. 4 " CHIRIQUENSIS. 5,5a♂ " APICIPENNIS. 6 PSEUDAGENIA CRESSONI. 7 " CURVINERVIS. 8♀ " INCOGNITA. 9 " MONTIVAGA. 10 PSEUDAGENIA GENTILIS. 11♀ " ISTHMICA. 12♀ " CHAMPIONI. 13♀ " COLLINA. 14,14a " TOLTECA. 15 " EXTREMA. 16 " PERDITA. 17 " TEAPE. 18♀ " MELANOCEPHALA. 19,19a♂ PSEUDAGENIA TABASCOENSIS. 20,20a♀ SALIUS NEOTROPICALIS. 21♀ " VELOX. 22 " OMILTEMIUS. 23,23a♂ " TRIFASCIATUS. 24 " RUFOSPINA. 25 " SMITHI. 26,26a♂ " ALPESTRIS. 27 " GUATEMALENSIS.

Hanhart imp



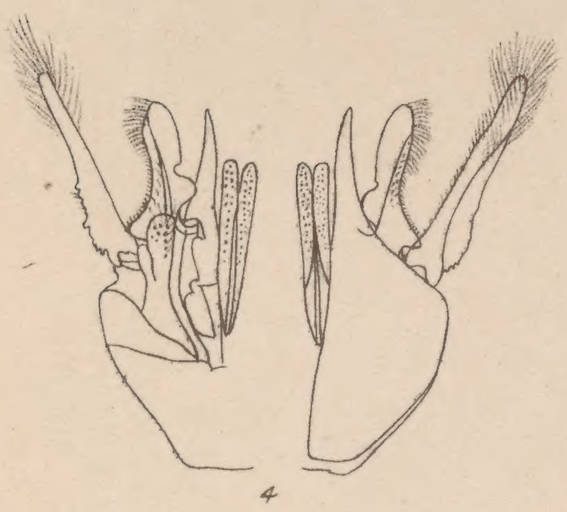
Biol. Centr.-Am. *Hymenoptera. Vol. II. Pl. 10.*


1

2

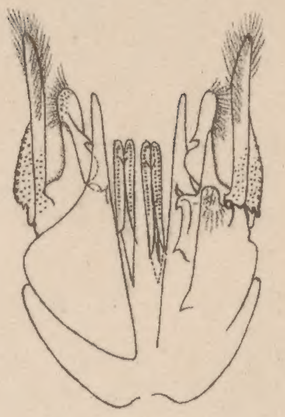
2a

3


4

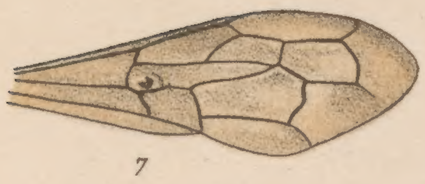
5

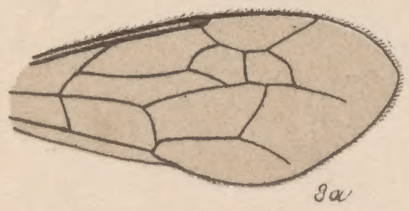
5a


6

8

9


7


8a

9a

10

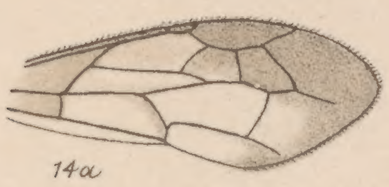
11

12

12a

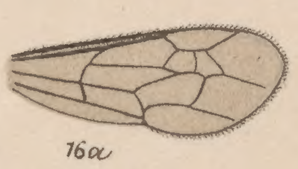
13

14

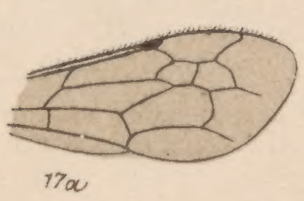

14a

15

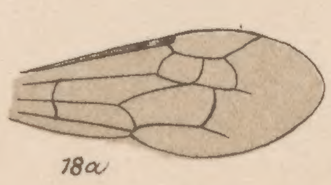
16


16a

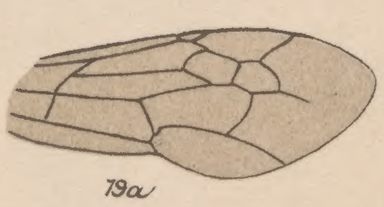
17


17a

18

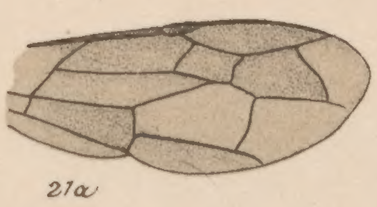

18a

19


19a

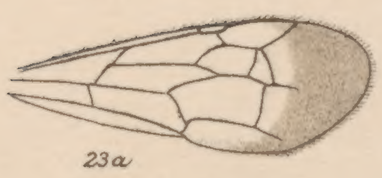
20

21


21a

22

23


23a

24

24a

25

26

26a

27

27a

28

28a

1 SALIUS CENTRALIS.
2,2a " NIVALIS.
3 " MEXICANUS.
4 " ROGERSI.
5,5a " DOLICHOCERUS.
6 " MORELOSENSIS.
7 " VERÆPACIS.
8,8a POMPILUS EUBULE.
9,9a " SMITHIANUS.

W. Purkiss lith.

10 POMPILUS MONTEZUMA.
11 " ZAPOTECUS.
12,12a " PULCHRINELLUS.
13 " ALTICOLA.
14,14a " TOLUCA.
15 " INTERSTITIALIS.
16,16a " IMPERIALIS.
17,17a " CHAMPIONI.
18,18a " OMILTEMENSIS.
19,19a " PHILADELPHICUS.

20 POMPILUS LEONA.
21,21a " VERÆPACIS.
22 " CHIRIQUENSIS.
23,23a " EXACTUS.
24,24a " BOUCARDI.
25 " APICULATUS.
26,26a " SUBARGENTEUS.
27,27a " FLAVOPICTUS.
28,28a " TORRIDUS.

Hanhart imp.
623.

KODAK Color Control Patches © The Tiffen Company, 2000
Kodak LICENSED PRODUCT
Blue Cyan Green Yellow Red Magenta White 3/Color Black
Centimeters Inches

1 NOTOCYPHUS VIOLACEIPENNIS.
2 PEPSIS GUATEMALENSIS.
3 » ANTENNALIS.
4 » CHARON.
5 » OCCIDENTALIS
6 » MONTEZUMA.
7 » RUBRA.

8 EPOMIDIOPTERON AUREO-HIRTUM.
9 SCOLIA SAUSSUREI.
10 ELIS VITRIPENNIS.
11♂,12♀ » REGINA.
13 » ALBOFIMBRIATA.
14 » MEXICANA.
15 MYZINE MONTIVAGA.
16 TIPHIA ELEGANS.

17 SCOLIA FERVIDA.
18 MYZINE PULCHRINA.
19 » SEXMACULATA.
20 » FULVICEPS.
21♂,22♀ » PULCHRICEPS.
23 » RUFIVENTRIS.
24 » ORNATICEPS.

W.Purkiss lith.

Hanhart imp.
626.

KODAK Color Control Patches © The Tiffen Company, 2000
Kodak LICENSED PRODUCT
Blue Cyan Green Yellow Red Magenta White 3/Color Black
Centimeters 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
Inches 1 2 3 4 5 6 7 8

Inches 1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
Centimetres
KODAK Color Control Patches © The Tiffen Company, 2000
Kodak
LICENSED PRODUCT
Blue Cyan Green Yellow Red Magenta White 3/Color Black

1 ♀ MUTILLA RUFOFEMORATA.
2 ♀ " ARGUTA.
3 ♂ " AMULÆ.
4,5♂,6♀ " CYLENE.
7 ♀ " PORCATA, *var.*
8 ♀ " CONFUSA.
9 ♀ " DÆDALA.
10 ♀ " SUBROBUSTA.
11 ♀ " IMPUDICA.

12 ♀ MUTILLA GAUMERI.
13 ♀ " CHAMPIONI.
14 ♀ " TOLTECA.
15,16♂ " CULTA.
17 ♀ " TEAPÆ.
18 ♀ " HÖGEI.
19♂ " THURA.
20♂ " EXACTA.
21♂ " CONNEXA.
22♂ " CHROMA.

23 ♀ MUTILLA BUGABENSIS.
24♂ " FORRERI.
25 ♀ " PANTALEONÆ.
26♂ " ORTHONA.
27 ♀ " TRIANGULARIS.
28 ♀ " CHIRIQUENSIS.
29♂ " POMONA.
30,31♂ " ODONTOPHORA.
32,33♂ " HERBERTI.

W. Purkiss lith. Hanhart imp.

29 30 31 32 33

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Biol. Centr.-Am. *Hymenoptera. Vol. II. Pl. 13.*

1. 1a ♀ SPHÆROPHTHALMA RESPUBLICANA
2 ♀ „ INIMICA
3 ♀ „ JOCULARIS
4 ♀ „ BEATA
5 ♀ „ RAVULA
6 ♀ „ CALTHA
7 ♀ „ EURYCLEA.
8 ♀ „ ANIMOSA.
9 ♀ „ DAMIA.

10 ♀ SPHÆROPHTHALMA EXTINCTOR.
11 ♀ „ AMPHISSA.
12 ♀ „ ARETA.
13 ♀ „ LYCIMNIA.
14 ♀ „ XANTHOCERATA.
15 ♀ „ PHEDYMA.
16 ♀ „ IPSEA.
17 ♀ „ CLEONICA.
18 ♀ „ SONORENSIS.

19 ♀ SPHÆROPHTHALMA MUNDA.
20 ♀ „ CHONTALENSIS.
21 ♀ „ SUBGRACILIS.
22 „ CEPHALICA.
23 ♂ „ JALISCOENSIS.
24 ♀ „ LUDOVICA.
25, 25a, ♂ „ EXCENTRICA.
26 ♀ „ MINUTORIA.
27 ♂ „ VOLATILIS.

W. Purkiss lith. Hanhart imp. 645.